

A revision of the African pod bugs of the tribe Clavigrallini (Hemiptera: Coreidae) with a checklist of the world species

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Synopsis

All known African and Malagasy species of the tribe Clavigrallini are described and a key is provided for their separation. Two genera and 44 species are recognized in the area covered. Two generic and two specific synonymies are newly established, one species is raised from synonymy and three specific synonymies are confirmed. Two subordinate taxa are raised to the rank of species. Twenty-three species are described as new. Twelve new combinations are established, five combinations are revived and one combination is used in its correct sense for the first time. A type-species is designated for one generic name and lectotypes are designated for 18 names in the species-group. Biological information derived from published works and from data labels is summarized for each species. The implications of this revision for the nomenclature of the more important pest species are summarized separately.

Introduction

The general morphology and systematic position of the tribe Clavigrallini, which belongs to the subfamily Pseudophloeinae of the family Coreidae, are discussed by Dolling (1978). That paper and the present work together constitute a complete revision of the tribe.

The tribe is represented throughout the Ethiopian and Oriental regions, extending into tropical Australia and the southern fringes of the Palaearctic region. Of the four genera, two are exclusively Oriental, one (*Oncaspidia* Stål, with a single species) is African and one (*Clavigralla* Spinola) occurs throughout Africa, Madagascar and associated islands and has a few species belonging to one of its more highly evolved sections in the Oriental region.

The major recorded host plants are herbaceous Leguminosae (Fabaceae), including many cultivated pulses. A rapidly growing body of literature exists concerning the bionomics, pest status and control of several species regarded as pests. In the English language these pests are called spiny brown bugs or pod bugs (Afrikaans: Ysterbek).

Clavigrallini may be recognized by their small size (length usually less than 11 mm), generally spiny outline and the characteristically spined, clavate posterior femora (Fig. 185). Where more spines are present on the posterior femur (extreme case in Fig. 124), Clavigrallini may be distinguished from other Pseudophloeinae of similar build by the absence of a tubercle from the base of the posterior femur on its posterior face close to the apex of the trochanter, a feature which is readily visible if present. *Risbecocoris* Izzard lacks this tubercle but is unlikely to be confused with the Clavigrallini. It has several long, laterally directed spines arising from the lateral margins of the pronotum.

Abbreviations of depositories

The specimens studied in the course of this revision are deposited in the various institutions whose names are abbreviated in the text as follows: Museum für Naturkunde der Humboldt-Universität, Berlin, D.D.R. (MNHU, Berlin); Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium (IRSNB, Brussels); National Museum, Bulawayo, Rhodesia (NM, Bulawayo); Zoological Museum of the University, Helsinki, Finland (ZMU, Helsinki); University of Ife, Ile-Ife, Nigeria (University of Ife); University of Ghana, Legon, Ghana (UG, Legon); the collection of Dr P. Duarte Rodrigues, at present at Museu e Laboratório Zoológico e Antropológico (Museu Bocage), Lisbon, Portugal (Duarte coll.); British Museum (Natural History), London, United Kingdom (BMNH, London); American Museum of Natural History, New York, U.S.A. (AMNH, New York); University Museum, Oxford, United Kingdom (UM, Oxford), Muséum National d'Histoire Naturelle, Paris, France (MNHN, Paris); Plant Protection Research Institute, Pretoria, Republic of South Africa (PPRI, Pretoria); Transvaal Museum, Pretoria, Republic of South Africa (TM, Pretoria); Institute of Agricultural Research, Samaru, Nigeria (IAR, Samaru); California Academy of Sciences, San Francisco, California, U.S.A. (CAS, San Francisco); Naturhistoriska Riksmuseet, Stockholm, Sweden (NR, Stockholm); the private collection of Professor J. A. Slater, at present at University of Connecticut, Storrs, Conn., U.S.A. (Slater coll.); Musée Royal de l'Afrique Centrale, Tervuren, Belgium (MRAC, Tervuren); University of Uppsala, Uppsala, Sweden (University of Uppsala); Naturhistorisches Museum, Vienna, Austria (NM, Vienna).

Terminology and measurements

The segments of the antennae and rostrum are numbered I–IV starting with the segment nearest the body; lengths exclude basal parts of segments capable of retraction into the preceding articulation and also exclude the antennal ring segment between III and IV. The origin of the first rostral segment is taken as the base of the labrum rather than the base of the first labial segment, which is usually concealed, whence the use of the term 'rostrum' ('rostral') in preference to 'labium' ('labial'). The angles at the point of greatest width of the pronotum are termed the posterolateral angles and the spines they bear the posterolateral spines. In the presentation of linear data, ratios are preferred to direct scalar measurements. Where practicable, means, ranges and the number of specimens measured are given, the number of specimens, n , being indicated by the formula ' $(n = x)$ ' following the mean. For a discussion of the rationale of these methods of presenting data see Dolling (1978 : 283).

Systematic section

Key to the genera of *Clavigrallini*

- 1 Side of head above base of antennifer bearing an erect spine (Fig. 1). Pronotum without large spines or tubercles on disc or near lateral margins. (Throughout Ethiopian region except Mascarenes) *ONCASPIDIA* Stål (p. 3)
- Side of head without spine (Figs 9, 51, 137) 2
- 2 Pronotum without large tubercles sublaterally or on disc; female abdomen with apex strongly deflexed; pubescence of pronotum uniform. (Oriental region eastwards to Solomon Islands and northern tropical Australia) *GRALLICLAVA* Dolling (1978 : 304)
- Pronotum with large tubercles on disc or sublaterally or, if without tubercles, pubescence of anterior two-thirds of pronotum strikingly different in colour and texture from that of posterior one-third 3
- 3 Pronotum with a group of four large tubercles on disc. (Oriental region eastwards to New Guinea and northern tropical Australia) *CLAVIGRALLOIDES* Dolling (1978 : 293)
- Pronotum with a pair of large tubercles sublaterally behind level of calli (Figs 138, 157, 188, etc.) or a semicircle of tubercles on disc (Figs 10, 50, 98, 126, etc.), often with additional tubercles but never with a group of four, rarely without tubercles (Fig. 131). (Africa and Mascarenes with a few species in Oriental region eastwards to China and Java)
- CLAVIGRALLA* Spinola (p. 6)

ONCASPIDIA Stål

Oncaspida Stål, 1873 : 81, 83. Type-species: *Clavigralla pilosicollis* Stål, by monotypy.

Length of head about two-thirds length of pronotum. Side of head in front of each eye just above base of antennifer with an erect spine. Antennifer with outer apical process porrect. Antenna with segment I longest, III shortest, IV shorter than II and with specialized sensory area occupying about nine-tenths of its length. Rostrum at rest with apex reaching to disc of metasternum, segment IV slightly longer and II slightly shorter than I, III about two-thirds as long as I. Bucculae small, occupying about one-third of length of ventral midline of head.

Pronotum strongly declivent, posterolateral angles produced, disc without large tubercles or spines, prescutellar spines present, small. Scutellum convex with a pair of small knobs at base. Mesosternum and metasternum broadly and shallowly longitudinally sulcate along midline. Dorsal ridge of metathoracic scent-gland peritreme entire, not bilobed. Anterior and intermediate femora each with 0–1 subapical spine beneath, posterior femur with two major spines and a terminal series, without basal tubercle.

Abdominal sterna III–VII with posterolateral angles prominent. Male genital capsule closed posteriorly, parameres obliquely capitate. Female with valvulae of ovipositor very long in comparison with other Coreidae.

REMARKS. A single species, similar in build to *C. tomentosicollis*, readily distinguished by the spines in front of the eyes. The ovipositor is remarkable for its length, even in comparison with other Pseudophloeinae, in which the structure of the ovipositor tends more towards the 'lacinate' type than that of other Coreidae.

DISTRIBUTION. Tropical and southern Africa.

INCLUDED SPECIES. A single known species, *O. pilosicollis* (Stål).

Description of species

Oncaspida pilosicollis (Stål)

(Figs 1–8)

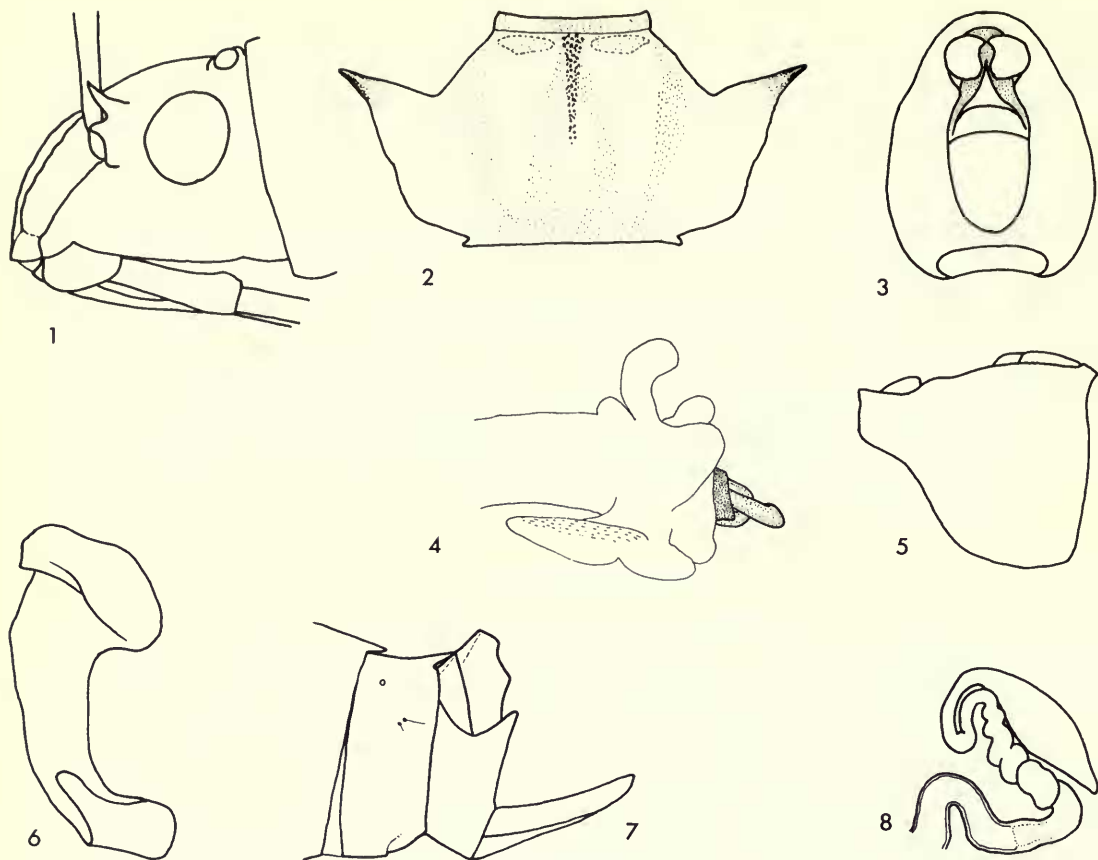
Clavigralla pilosicollis Stål, 1855 : 31. LECTOTYPE ♀, SOUTH AFRICA (NR, Stockholm), here designated [examined].

Clavigralla similis Signoret, 1860 : 944. LECTOTYPE ♂, ZANZIBAR (NM, Vienna), here designated [examined]. [Synonymized by Stål, 1866 : 107.]

Oncaspida pilosicollis (Stål) Stål, 1873 : 83.

Length: ♂, 7.3–9.1 mm, mean 8.2 mm (n = 11); ♀, 8.2–9.4 mm, mean 9.0 mm (n = 11).

Form robust, deep-bodied.



Figs 1-8 *Oncaspidia pilosicollis*. (1) head, left lateral view; (2) pronotum, dorsal view; (3) genital capsule with parameres, dorsal view; (4) conjunctiva, left lateral view (vesica strongly flexed to right, strongly foreshortened in this view); (5) genital capsule, right lateral view; (6) left paramere, medial view; (7) VII and succeeding segments of ♀ abdomen with ovipositor exerted; (8) spermatheca.

Spine above antennifer slender, curved (Fig. 1); external apical process of antennifer porrect, apically rounded, its dorsal margin flexed inwards almost horizontally. Ratio of lengths of antennal segments I : II : III : IV not differing significantly between the sexes, about 1·00 : 0·80 : 0·65 : 0·86; length of segment I divided by width of head including eyes in both sexes 1·06-1·32, mean 1·17 (n = 21). Ratio of lengths of rostral segments I : II : III : IV about 1·00 : 0·90 : 0·70 : 1·08 in both sexes.

Pronotum (Fig. 2) steeply declivent anteriorly, its posterolateral angles rather narrowly produced anterolaterally and tapering into slender spines; width of pronotum across tips of spines divided by width of head including eyes in male 2·62-3·09, mean 2·80 (n = 11), in female 2·76-3·07, mean 2·89 (n = 10). Corium with apex slightly produced, at rest reaching posteriorly to a point level with the end of the basal third of laterotergite VI. Anterior and intermediate femora each with 0·1 very small subapical spine beneath; posterior femur with 2 major spines, the first about half as long as the second, with about 3 short spines or granules between them, and a terminal series of 4 spines. Posterior tibia not arcuate basally, its length divided by length of posterior femur 0·75-0·84, mean 0·80 (n = 21).

Abdominal sternites III-VII each with posterolateral angles drawn out into narrowly triangular spines about one-quarter as long as lateral margin of segment. Male genital capsule (Figs 3, 5) closed posteriorly, lip distinctly produced and pouched, tongue triangular. Paramere with apex capitate (Fig. 6), the capitate ends of the two parameres almost horizontal at rest and largely occluding, in dorsal view, space between tongue and lip of capsule (Fig. 3). Conjunctiva (Fig. 4) with dorsomedian lobe broad, low, transverse; intermediate dorsal lobe broad, high; distal dorsomedian lobe small, rounded; distal dorsolateral lobes

absent; apical ventral lobes small, transverse; distal ventrolateral lobes each with a rounded, membranous, posterior subdivision and a reflexed, dorsally sclerotized, narrow, anterior subdivision; no other lobes sclerotized. Ejaculatory reservoir complex with wings and straps long, symmetrical; vesica long, sclerites protecting its base large, almost symmetrical. Ovipositor with valvulae very long (Fig. 7). Sclerites of dorsal wall of gynatrium narrowly V-shaped, longitudinal arms slightly more than twice as long as transverse arms, both arms ribbon-like in vertical plane. Spermatheca (Fig. 8) with bulb fusiform, duct tightly convoluted in part adjacent to bulb. Ovarian egg (only 1 examined) 1.38×0.52 mm, with 6 micropyles.

Head weakly granulate, antennal segments I–III very weakly and minutely granulate. Pronotum granulate, disc also punctate, propleura granulate-punctate, area of pronotum and propleura immediately anterior to each posterolateral angle with about 8 small, blunt, piceous tubercles. Scutellum with entire surface coarsely and irregularly granulate. Meso- and metapleura granulate-punctate. Clavus seriatly punctate in 3 rows. Corium more weakly punctate than clavus, especially at apex, punctures in basal half seriate. Veins in basal half of corium very weakly granulate. Femora and tibiae minutely and weakly granulate. Abdominal sterna transversely rugose, laterotergites weakly granulate, tergites I and II transversely rugose, III and IV with large, sometimes confluent punctures largely restricted to median half of each, V–VII with smaller punctures occupying whole width of V and VI but restricted to centre third of VII.

Long, erect, colourless pubescence present on head, antennal segments I–III, pronotum, scutellum, thoracic pleura, abdominal sterna and throughout all legs. Shorter, brown, erect pubescence arising from tubercles in anterior midline of pronotum. Shorter, suberect pubescence present on clavus, corium, abdominal laterotergites and rostrum and also mixed with the longer type of hairs on antennae, legs and abdominal sterna, usually colourless but pale or dark brown where it arises from similarly coloured areas of corium. Short to moderately long, generally decumbent and more or less tomentose pubescence present on head, antennal segments I–III (here very sparse), pronotum, scutellum, thoracic pleura, abdominal sterna and femora, usually appearing white or silvery but brown in 4 slightly oblique longitudinal bands on pronotum (Fig. 2).

Colour of integument generally pale pinkish brown. Ocellar tubercles, extreme base of scutellum, anterior midline of pronotum, posterolateral spines of pronotum, ventral surface of head, thoracic sterna, spots on coxae, centre of abdominal sterna II and III and parts of abdominal terga, especially punctures, piceous to black. Antennal segments I–III except for apices, bases of femora, tibiae except for basal, apical and sometimes median annuli, parts of tarsi and almost the whole of laterotergites VI and tergum VII stramineous. Hemelytra with clavus and basal half of corium stramineous, with a few spots on anterior veins dark brown, apical half of corium variegated pale and dark brown, membrane colourless, hyaline.

REMARKS. A distinctive species, as indicated in the generic description above. I follow Stål's (1865 : 107) interpretation of *Clavigralla similis* Signoret, which is based on a specimen in Vienna apparently determined by Stål as being Signoret's type-material. Signoret's (1860 : 944) description is inadequate and confusing.

DISTRIBUTION. Tropical and southern Africa but not Madagascar. Apparently less common in West Africa. Perhaps avoids densely forested areas.

MATERIAL EXAMINED

Clavigralla pilosicollis Stål, lectotype ♀, **South Africa**: 'Caffraria' (*J. Wahlb.*) (NR, Stockholm). *Clavigralla similis* Signoret, lectotype ♂, **Zanzibar** [bears labels: (1) Zanzibar/ coll. Signoret, (2) similis/ det. Signoret, (3) pilosicollis/ det. Stål] (NM, Vienna).

Liberia: 1 ♀, Kpaine, 30.vii.1953 (*W. Peters*) (BMNH, London). **Ghana**: 1 ♀, Wegbe, Volta River, 1.xi.1967 (*D. Leston*) (UG, Legon). **Nigeria**: 1 ♀, Ibadan, 15–19.xii.1975 (*J. C. Deeming*) (IAR, Samaru). **West Africa**: 3 ♀, 'Cameroons' (ex coll. *Distant*); 1 ♀, 'W. Afr.' (BMNH, London). **Zaire**: 1 ♀, Kasongo, viii.1959 (*P. L. G. Benoit*); 1 ♀, Sankuru, M'Pemba Zeo (Gandajika), 9.i.1960 (*R. Maréchal*) (MRAC, Tervuren); 1 ♂, Ngowa Kwango, 3.ii.1938 (*J. Mertens*); 1 ♂, Ngowa, 9.v.1939 (*R. P. J. Mertens*); 1 ♂, Nguela, Usambara (no other data); 1 ♂, Marais Kululu, 8.vi.1939 (*H. J. Brédo*); 1 ♂, Lubumbashi, 9.iii.1939 (*Brédo*); 1 ♂, Mpese, v–vi.1937 (*R. P. J. Cooreman*) (IRSNB, Brussels); 2 ♂, E. of R. Semliki, 1931–1932 (*E. B. Worthington*); 1 ♀, Katanga, Kambove, 4000–5000 ft (1200–1500 m), 25.iii.1907 (*Neave*) (BMNH, London). **Uganda**: 1 ♂, Mabira, on dung, 16.viii.1925 (*G. L. R. Hancock*); 1 ♂, Mbarara, 29.v.1911 (*C. C. Gowdey*); 1 ♂, top of escarpment N. of Fort Portal, 4700 ft (1430 m), 24.xi.1911 (*S. A. Neave*); 1 ♀, Mpumu (*Miss M. Robertson*) (BMNH, London). **Kenya**: 1 ♂, 12 miles (19 km) NW. of Mazeras, c. 500 ft (150 m), 23.ix.1905 (*E. B. Poulton*) (UM, Oxford); 1 ♂, Chyulu Hills, 5600 ft (1680 m), vii.1938 (*Coryndon Mus. Exped.*); 1 ♀, Mombasa (*van Someren*) (BMNH, London). **Tanzania** (Mainland):

1 ♂, Mbeya Mountain, 33° 25' E, 8° 48' S, 7000 ft (2100 m), 5.viii.1959 (*Cambridge Univ. Exped.*); 1 ♂, E. rim of Ngoro-ngoro Crater, 7000 ft (2100 m), 20.vii.1959 (*Cambridge Univ. Exped.*) (BMNH, London). **Zanzibar:** 2 ♂, 1 ♀, i-ii.1925 (*H. J. Snell*) (BMNH, London). **Malawi:** 2 ♂, Mlanje, 1.vii.1913 and 15.viii.1913 (*S. A. Neave*); 1 ♀, Mlanji Boma, 2400 ft (720 m), 26.iv-5.v.1910 (*Neave*) (BMNH, London). **Rhodesia:** 1 ♂, 1 ♀, Mashonaland, Salisbury, 1898 (BMNH, London). **South Africa:** 2 ♂, 3 ♀ (no further locality data) (*A. L. Capener*); 2 ♂, 2 ♀, N. Transvaal, Louis Trichard, 20-30.xii.1956 (*Capener*) (Slater coll.); 8 ♂, 2 ♀, Natal, Durban (AMNH, New York); 1 ♂, 1 ♀, Wonderboom, 12.iii.1905 (*Swierstra*) (TM, Pretoria); 1 ♀, Natal, Lake St Lucia, Charters Creek, 12.xi.1967 (*J. A. & S. Slater, T. Schuh*) (PPRI, Pretoria); 1 ♂, Pondoland, Port St John, 5-30.vi.1928 (*R. E. Turner*); 1 ♂, 1 ♀, Natal, Umbilo, 14.vi.1914 (*L. Bevis*); 3 ♂, 1 ♀, Natal, Malvern, 13.vi.1897, 16.vi.1897, vii.1897, 10.vi.1897; 1 ♂, Zululand, Mtunzini, 7.vi.1926 (*Turner*); 1 ♂, Pretoria, 12.iii.1905 (*C. J. Swierstra*) (BMNH, London).

CLAVIGRALLA Spinola

Clavigralla Spinola, 1837 : 200. Type-species: *Clavigralla gibbosa* Spinola, by monotypy.

Acanthomia Stål, 1873 : 81, 82. Type-species: *Clavigralla natalensis* Stål, by PRESENT DESIGNATION.

Syn. n.

Lancha Shadab, 1972 : 3-7. Type-species: *Myla schnelli* Villiers, by monotypy. Syn. n.

Length of head half to three-quarters that of pronotum. Antennifers weakly to strongly divergent, process at outer apical angle of antennifer short and porrect or long and deflexed with its apex in contact with maxillary plate. Side of head in front of eye without spine.

Pronotum rather strongly to very strongly declivent anteriorly, posterolateral angles weakly to very strongly produced, each bearing apically a usually slender spine. Disc of pronotum rarely without tubercles or spines, never with a group of four stout, blunt tubercles in middle, usually with a stout, blunt tubercle or spine close to lateral margin about half way between posterolateral and anterolateral angles, often with a more or less regular, anteriorly concave semicircle of spines or tubercles posterior to this pair. Scutellum equilateral or slightly longer than its basal width, flat to strongly convex, midline impressed in convex forms. Metapleural scent-gland peritreme with dorsal ridge entire and shortly reniform or bilobed. Corium with apex scarcely to distinctly produced.

Abdomen with posterolateral angles of sternites III-VII usually prominent, often strongly and spinously produced. Male genital capsule with lip narrow or broad, often filling posterior emargination of capsule, tongue entire or apically trifold or bifid. Tergum IX of female usually in horizontal plane, rarely apically deflexed. Valves of ovipositor not especially long. Spermatheca with bulb narrowly lunate, duct looped to strongly convoluted. Sclerites of wall of gynatrium basically V-shaped, not deep in vertical plane.

REMARKS. When Stål (1873) differentiated his new genus *Acanthomia* from *Clavigralla* he listed five species under the latter but separated the first of these, *C. horrens* Dohrn, from the remaining four species (including *gibbosa*, the type-species) by a horizontal rule across the page. This convention presumably indicates that he had not seen specimens of the species below the rule. The character he uses to separate *Clavigralla* sensu Stål from *Acanthomia* in his key is the relative lengths of rostral segments II and IV, with IV equal to or longer than II in *Acanthomia* and shorter than II in *Clavigralla*. While IV is slightly shorter than II in *horrens*, it is definitely longer in *gibbosa*. This confirms that *gibbosa*, which is closely related to *tomentosicollis*, was unknown to Stål. I have selected *C. natalensis*, a species described by Stål himself, as type-species of *Acanthomia*. If it were necessary to treat the species related to *elongata* in a different generic or sub-generic taxon from those related to *tomentosicollis* and *gibbosa*, the name *Acanthomia* would be available for the former. However, this course of action seems inadvisable in view of the size of the genus and the fact that a further generic name would be required for *tuberclicollis* and its allies. Shadab (1972) recognized that *Myla schnelli* Villiers did not belong to the genus *Myla* but overlooked its close affinity with *C. elongata* and erected the unnecessary new genus *Lancha* for it.

SPECIES GROUPS AND SUBGROUPS. There are three major external features which may be used as a basis for defining groups of species within the genus. First, the external apical process of the antennifer may be short and porrect (Fig. 9) or long and deflexed (Fig. 51). Secondly, the dorsal

ridge of the metathoracic peritreme may be bilobed (Fig. 12) or entire (Fig. 54). Thirdly, the pilosity of the pronotum may be uniform (Fig. 50) or divided into an anterior area of pale, tomentose pubescence and a posterior area of darker, erect to decumbent pubescence (Fig. 188). On the basis of comparisons with related genera and of correlation with other presumed apomorphies, the second alternative state of each character mentioned seems to be apomorphic with respect to the first. Three groups of species may be recognized: (1) a group of species related to *C. tuberculicollis* in which the apical process of the antennifer is short and porrect, the pubescence of the pronotum is uniform and, except in the case of *C. uelensis*, the dorsal ridge of the metathoracic peritreme is bilobed; (2) a more advanced group related to *C. elongata* in which the apical process of the antennifer is long and deflexed, the dorsal ridge of the metathoracic peritreme is entire and the pubescence of the pronotum uniform; (3) a group of species related to *C. tomentosicollis* which differs from the *elongata*-group in having the pubescence of the anterior and posterior parts of the pronotum dissimilar. *C. uelensis* has probably acquired the entire state of the dorsal ridge of the peritreme independently from the *elongata*- and *tomentosicollis*-groups, as it is very similar in many details to *C. leroyi*. In all members of the *tuberculicollis*-group where the male is known (i.e. all except *C. uelensis*) the posterior lip of the genital capsule does not completely fill the posterior emargination and the apices of the parameres are visible in posterior view (Fig. 11), as in most other Pseudophloeinae, whereas in the *elongata*- and *tomentosicollis*-groups the posterior lip is much better developed and conceals the apices of the parameres in posterior view. This confirms the conclusion that these two groups are more highly evolved than the *tuberculicollis*-group. In the *elongata*-group the pronotum bears numerous to few spines on the disc, usually with some of them organized into a semicircle terminating anteriorly in a pair of sublateral spines (e.g. Fig. 50) as in the *tuberculicollis*-group. In the *tomentosicollis*-group most of the spines are very small and concealed by the pubescence, only the large, sublateral pair being retained (e.g. Fig. 188). Even these are lacking in *C. leontjevi* (Fig. 131). The posterolateral pronotal angles in the *elongata*-group are in general more strongly produced than those of the *tomentosicollis*-group and the posterolateral spines arise less abruptly from them. These two characters tend to confirm the validity of the groups and the relatively greater apomorphy of the *tomentosicollis*-group, as the pattern of pronotal spines and the shape of the posterolateral pronotal angles in the *elongata*-group are shared with the less highly evolved *tuberculicollis*-group.

The *tuberculicollis*-group is too small to warrant subdivision and the *elongata*-group does not usefully lend itself to such treatment as the patterns of relationship within it are obscured by the striking apomorphies of several of its included species. In this group, close relationships obviously exist between *hystrix* and *hystricodes* and between *mira* and *annectans*; *natalensis* is rather isolated and the remainder of the group fall into two series, those in which the veins of the hemelytral membrane are finely pigmented (*elongata* to *schnellii* in the check-list) and those in which they are heavily and broadly pigmented (*insignis* to *aculeata*). The *tomentosicollis*-group can usefully be divided into five subgroups. The first contains only *leontjevi*, which is unique in lacking sublateral pronotal tubercles. It shares the character of an entire tongue in the genital capsule with the next two subgroups. Primitively, the tongue is triangular when seen in dorsal view (Figs 140, 181) with a prominent, ventral, longitudinal keel. There is a tendency for the tongue to become apically rounded and in *C. strabo* (Fig. 170) it appears in dorsal view to be mucronate as the keel can be seen projecting beyond the rounded apex of the dorsal surface of the tongue. In the *ruandana*-subgroup the pigmentation of the hemelytral membrane is almost uniformly diffused and the head is elongate while in the *spiniscutis*-subgroup the membrane is spotted and the head is of normal length for the genus with the exception of *bovilla* in which the head is elongate. Possibly this species would be better placed in the *ruandana* subgroup, although its spotted membrane would be anomalous. The trend in the *ruandana*- and *spiniscutis*-subgroups for the tongue of the genital capsule to depart from the ancestral triangular shape is continued in the *tomentosicollis*-subgroup. Here the tongue is apically emarginate and the apex of the ventral keel projects into this emargination, giving the tongue a trifid appearance (Fig. 194). In all members of this subgroup the pigmentation of the membrane of the hemelytron is evenly diffused. The most highly evolved form of the tongue is encountered in the *wittei*-subgroup, where it is deeply bifid and the keel is greatly reduced (Fig. 222). The hemelytral membrane in the species of this subgroup is spotted.

Key to groups and subgroups

- | | | |
|---|---|--|
| 1 | Antennifer with outer apical process short, porrect (Fig. 9) | <i>tuberculicollis</i> -group (p. 12) |
| - | Antennifer with outer apical process long, deflexed (Fig. 51) | 2 |
| 2 | Pubescence of pronotum almost uniform. | <i>elongata</i> -group (p. 19) |
| - | Pubescence of anterior part of pronotum differing markedly in colour and texture from that of posterior part (<i>tomentosicollis</i> -group) | 3 |
| 3 | Pronotum without sublateral tubercles (Fig. 131) | <i>leontjevi</i> -subgroup (p. 48) |
| - | Pronotum with a pair of large, sublateral tubercles (Fig. 138) | 4 |
| 4 | Tongue of male genital capsule entire | 5 |
| - | Tongue of male genital capsule apically emarginate | 6 |
| 5 | Membrane of hemelytron with diffuse pigmentation | <i>ruandana</i> -subgroup (p. 50) |
| - | Membrane of hemelytron spotted | <i>spiniscutis</i> -subgroup (p. 54) |
| 6 | Tongue of male genital capsule apically trifid (Fig. 194) | <i>tomentosicollis</i> -subgroup (p. 63) |
| - | Tongue of male genital capsule apically bifid (Fig. 221) | <i>wittei</i> -subgroup (p. 74) |

DISTRIBUTION. Tropical and southern Africa, Madagascar and islands adjacent to these, southern Arabia, Oriental region eastwards to Java. The genus is essentially African. Two invasions of the Oriental region have occurred, once by the common ancestor of *gibbosa* and *orientalis* and once by *scutellaris*, which is also present in Arabia and in the more arid areas of Kenya and Sudan. *C. scutellaris* is the sister-species of *C. tomentosicollis*; *orientalis* and *gibbosa* are more distantly related but belong to the *tomentosicollis*-subgroup. All three species-groups are represented in Madagascar and the two known Malagasy species of the *tomentosicollis*-group belong to different subgroups. Only *C. elongata* seems to be present on the more remote and smaller islands in the Ethiopian region, occurring in the Canary and Cape Verde Islands, Principe, São Tomé, Seychelles, Réunion, Mauritius and Rodriguez as well as Arabia (where it is the only species to be found other than *scutellaris*), Madagascar and the African mainland. *C. tomentosicollis* is represented on the Comoro Islands. The area of greatest species diversity is the highlands of central Africa, especially northern Zambia and the vicinity of the Rift Valley. Several species have very wide distributions within Africa. The most important are *tomentosicollis*, *elongata*, *shadabi*, *wittei*, *spiniscutis*, *curvipes*, *simillima*, *leontjevi*, *hystrix* and *hystricodes*. Of these, *curvipes* and *simillima* are sister species with vicarious distributions and *shadabi* appears to be replacing *elongata* in the mainland of West Africa, where *elongata* is restricted to the offshore island groups only, and in lowland central Africa, where the two species coexist over a wide area.

Key to African and Malagasy species

Note. Beware the superficially similar *Oncaspidia* Stål and *Myla* Stål. The former is distinguished by the spine above the base of the antenna (Fig. 1). *Myla* belongs to a large group of genera of Pseudophloeini in which there is a small tubercle close to the base of the posterior face of the posterior femur (Fig. 247). This tubercle is lacking in Clavigrallini. The pubescence of *Myla* is never tomentose.

- | | | |
|---|---|--|
| 1 | Antennifer with apical process short, porrect (Figs 9, 34) | 2 |
| - | Antennifer with apical process long, deflexed (e.g. Figs 51, 137) | 5 |
| 2 | Robust species with posterolateral angles of abdominal sternites (Fig. 13) and tubercles and posterolateral angles of pronotum (Fig. 10) very prominent (Madagascar) | <i>C. tuberculicollis</i> (Reuter) (p. 12) |
| - | Less robust species with posterolateral angles of abdominal sternites (Figs 22, 29, 35) and tubercles and posterolateral angles of pronotum (Figs 20, 21, 27, 31) less prominent. (African mainland, not Madagascar) | 3 |
| 3 | Metathoracic scent-gland peritreme with dorsal ridge entire (Fig. 33). (Central Africa) | <i>C. uelensis</i> (Schouteden) (p. 18) |
| - | Metathoracic scent-gland peritreme with dorsal ridge bilobed (as Fig. 12) | 4 |
| 4 | Pronotum (Fig. 27) with posterolateral angles scarcely produced, width across apices of posterolateral spines divided by width of head including eyes 2·10 or less. (Southern central Africa) | <i>C. zambiae</i> sp. n. (p. 17) |
| - | Pronotum (Figs 20, 21) with posterolateral angles more strongly produced, width across apices of posterolateral spines divided by width of head including eyes 2·14 or more. (Widespread in tropical Africa from Guinea and Sudan to Angola and Malawi) | <i>C. leroyi</i> (Schouteden) (p. 14) |

- 5 Pubescence of anterior, declivent part of pronotum of almost uniform colour and texture with that of posterior, horizontal part. Posterolateral angles of pronotum strongly produced, passing gradually into posterolateral spines (e.g. Figs 36, 43, 50, 78, 83, 87-89, 126) 6
- Pubescence of anterior, declivent part of pronotum pale, silvery or golden, tomentose, that of posterior, horizontal part darker, brown, erect to decumbent, the two areas abruptly demarcated each from the other along an almost straight to sharply undulating or zigzag line joining posterolateral angles. Posterolateral angles usually only slightly prominent with spines arising abruptly from them (e.g. Figs 131, 138, 144, 148) 25
- 6 General coloration blackish brown, forewing membrane heavily blotched with dark chocolate brown 7
- General coloration greyish, yellowish or reddish brown, forewing membrane with brown lines generally following course of veins 8
- 7 Antennal segment I longer than 1.7 times width of head including eyes. Antennae with rather obscure pale and dark annulations. (Widespread in equatorial Africa) *C. hystrix* (Dallas) (p. 19)
- Antennal segment I shorter than 1.5 times width of head including eyes. Antennae with conspicuous pale and dark annulations. (Widespread in tropical Africa) *C. hystrioides* Stål (p. 21)
- 8 Scutellum with two longitudinal rows of outstanding, blunt spines on disc (Fig. 123). (South Africa and Rhodesia) *C. horrida* (Germar) (p. 44)
- Scutellum never with outstanding spines 9
- 9 Head with frontal area inflated (Figs 97, 243). 10
- Head with frontal area declivent from behind level of antennae (Fig. 51) 11
- 10 Distal dorsomedian lobe of conjunctiva bearing sclerotized appendages (Figs 100, 101). (Western, central and eastern Africa) *C. mira* sp. n. (p. 36)
- Conjunctiva without sclerotized appendages (Figs 245, 246). (Zaire) *C. annectans* sp. n. (p. 38)
- 11 Pronotum (Fig. 126) with posterolateral lobes and spines very short. Scutellum weakly convex. Spines at posterolateral angles of abdominal sterna very small (Fig. 128). (Southern Africa) *C. natalensis* Stål (p. 46)
- Pronotum (e.g. Figs 50, 104, 117) with posterolateral angles and spines more strongly produced. Scutellum usually more strongly convex and abdominal spines longer 12
- 12 Pubescence of head, pronotum and scutellum not or poorly organized into narrow, longitudinal lines of white hairs; if such pale lines are partially discernible they are never present on declivent part of pronotal disc posterior to calli. Forewing membrane colourless, its veins finely picked out in brown. (Several common species, throughout Africa and Madagascar). 13
- White pubescence organized into conspicuous, narrow longitudinal lines on head, pronotum and scutellum, including three lines traversing entire length of pronotum. Forewing membrane with broad bands of brown coloration following course of veins and usually spreading onto membrane between veins especially on disc. (Species of restricted distribution, mostly confined to high ground in eastern, central and southern Africa; not known from West Africa or Madagascar) 19
- 13 Scutellum flat, not elevated above level of posterior margin of pronotum. Pronotum with posterolateral angles strongly produced anterolaterally (Figs 87, 88, 89, 91). (Western and central Africa). *C. schnelli* (Villiers) (p. 34)
- Scutellum convex (Figs 53, 77), elevated above level of posterior margin of pronotum when viewed in profile 14
- 14 Spines at posterolateral angles of abdominal sternites long, almost perpendicular to lateral margins of abdomen (Figs 79, 80). Scutellum without long, erect pubescence (Madagascar only) 15
- Spines at posterolateral angles of abdominal sternites shorter, usually distinctly deflected posteriad (Fig. 52). Scutellum with at least some long, erect pubescence (Africa and Madagascar) 16
- 15 Antennal segment I longer than 1.4 times width of head including eyes. Produced, posterolateral angles of pronotum and of abdominal sternites (Figs 78, 79) more slender. (Madagascar) *C. madagascariensis* sp. n. (p. 31)
- Antennal segment I shorter than 1.4 times width of head including eyes. Produced, posterolateral angles of pronotum and of abdominal sternites (Figs 83, 80) stouter. (Madagascar) *C. asterix* sp. n. (p. 33)
- 16 Scutellum moderately convex and strongly tuberculate (Fig. 77). (Madagascar) *C. ankatsoensis* sp. n. (p. 31)
- Scutellum strongly convex with less prominent tuberculation (Fig. 53) 17

- 17 Head short (Fig. 72). Tibiae with dark, basal, apical and median annuli. (West and central Africa) *C. breviceps* sp. n. (p. 30)
- Head longer (Figs 50, 66). Tibiae without dark, median annuli. 18
- 18 Semicircle of spines on disc of pronotum with anterior pair much more prominent than the pair behind them (Fig. 66). (West and central Africa) *C. shadabi* sp. n. (p. 28)
- Semicircle of spines on disc of pronotum with the first two pairs of spines of comparable size (Fig. 50). (Central, eastern and southern Africa and Canary Is., São Tomé, Príncipe, Seychelles, Madagascar, Réunion, Mauritius, Rodriguez, S. Arabia) *C. elongata* Signoret (p. 24)
- 19 Width across apices of posterolateral spines of pronotum greater than 3.0 times width of head including eyes 20
- Width across apices of posterolateral spines of pronotum less than 3.0 times width of head including eyes 21
- 20 Length of antennal segment I greater than 1.6 times width of head including eyes. Spinously produced posterolateral angles of abdominal sternites perpendicular to lateral margins of abdomen. Width of pronotum across apices of posterolateral spines more than 3.5 times width of head including eyes. (Malawi) *C. egregia* sp. n. (p. 41)
- Length of antennal segment I less than 1.6 times width of head including eyes. Spinously produced posterolateral angles of abdominal sternites deflected posteriad. Width of pronotum across apices of posterolateral spines less than 3.5 times width of head including eyes. (Zambia, Zaire) *C. longispina* sp. n. (p. 43)
- 21 Posterolateral spines of abdominal sternites more nearly perpendicular to lateral margins of abdomen and broader at the base (Figs 113, 115) 22
- Posterolateral spines of abdominal sternites strongly deflected posteriad and narrower (Fig. 106) 23
- 22 Width of pronotum across apices of posterolateral spines greater than 2.9 times width of head including eyes. Male paramere with apical tooth less prominent (Fig. 114). (Angola) *C. angolensis* sp. n. (p. 41)
- Width of pronotum across apices of posterolateral spines less than 2.9 times width of head including eyes. Male paramere with apical tooth more prominent (Fig. 119). (South Africa) *C. aculeata* sp. n. (p. 43)
- 23 Scutellum weakly convex (Fig. 108). Male paramere with apical margin strongly oblique (Fig. 111). (East Africa) *C. andersoni* sp. n. (p. 41)
- Scutellum strongly convex (Fig. 107). Male paramere with apical margin less strongly oblique (Figs 109, 110) 24
- 24 Male paramere with apical margin straight, blade longer in relation to shaft (Fig. 109). (Highlands of central Africa) *C. insignis* (Distant) (p. 39)
- Male paramere with apical margin convex, blade shorter in relation to length of shaft (Fig. 110). (Burundi) *C. minor* (Schouteden) (p. 39)
- 25 Pronotum without large, blunt tubercles at sides of disc (Fig. 131). (Western, central and eastern Africa) *C. leontjevi* (Bergróth) (p. 48)
- Pronotum with a pair of large, usually blunt tubercles at sides of disc behind level of calli (e.g. Figs 188, 209, 220) 26
- 26 Membrane of hemelytron with disc evenly suffused with pale to medium brown coloration, rarely with a few spots of slightly more intense pigmentation between longitudinal veins near basal cells, in which case male genital capsule with tongue trifid 27
- Membrane of hemelytron largely colourless or very faintly milky white, with 1–5 brown or piceous spots between bases of longitudinal veins where these emerge from basal cells (Fig. 219); spots sometimes very faint; membrane occasionally with more extensive piceous blotching (Fig. 178); tongue of male genital capsule never trifid 34
- 27 Length up to 8.5 mm (largest females); posterior tibia short, strongly arcuate at base (Fig. 212) 28
- Length greater than 8.5 mm except for smallest males, in which case posterior tibia long and only weakly arcuate at base (Fig. 185) 29
- 28 Antennal segment I slender (Fig. 211). (Tropical Africa north of latitude 3° S) *C. curvipes* (Stål) (p. 70)
- Antennal segment I stouter (Fig. 210). (Africa south of latitude 6° S) *C. simillima* sp. n. (p. 73)
- 29 Length of antennal segment I divided by width of head including eyes 1.11 or less and head elongate (Fig. 137). Male genital capsule with tongue entire 30

- Length of antennal segment I divided by width of head including eyes greater than 1.11 or, if less, head not elongate (Figs 187, 189) and tongue of male genital capsule trifold (Fig. 194) 31
- 30 Pronotum with posterolateral spines very short (Fig. 148). Abdominal sternites with posterolateral angles not at all prominent (Fig. 150). (Northern Zambia) . . . *C. oxonis* sp. n. (p. 53)
- Pronotum with posterolateral spines longer (Fig. 138). Abdominal sternites with posterolateral angles distinctly prominent (Fig. 139). (Highlands of central Africa) . . . *C. ruandana* (Schouteden) (p. 50)
- 31 Pronotum with posterolateral spines directed strongly posteriad (Fig. 144). Male genital capsule with tongue entire. (Highlands of central Africa) . . . *C. biston* sp. n. (p. 52)
- Pronotum with posterolateral spines directed laterad (Figs 188, 190, 203). Male genital capsule with tongue trifold 32
- 32 Band of dark pubescence on pronotum posterior to posterolateral angles almost completely divided into two by a narrow, V-shaped, median, longitudinal band of pale pubescence (Fig. 203). Posterior tibia distinctly arcuate at base. (Madagascar) *C. annulipes* Signoret (p. 70)
- Band of dark pubescence on pronotum posterior to posterolateral angles not divided (Figs 188, 190). Posterior tibia only weakly arcuate at base (Fig. 192). (Not occurring in Madagascar) 33
- 33 Pronotum with area of pale pubescence completely divided by dark, longitudinal band, junction with area of dark pubescence with two small, posteriorly projecting extensions of pale pubescence close to midline (Fig. 188). (Africa south of the Sahara except for the north-eastern part; Comoro Is.) *C. tomentosicollis* Stål (p. 63)
- Pronotum with area of pale pubescence incompletely divided, junction of pale and dark areas following a gently undulating line without distinct, narrow projections of pale pubescence into dark area (Fig. 190). (Northern Kenya, Sudan, Arabia, SW. Asia) *C. scutellaris* (Westwood) (p. 69)
- 34 Form of body depressed. Scutellum only moderately convex (Figs 231, 232). Abdominal sternites with posterolateral angles only slightly prominent (Figs 233, 234). Pronotum with posterolateral angles triangularly prominent, their spines very short (Figs 229, 230). Length of antennal segment I divided by width of head including eyes 0.80 or less 35
- Deeper bodied. Scutellum usually more strongly convex. Abdominal sternites with posterolateral angles usually more strongly produced (Figs 154, 158, 169, 179, 224). Posterolateral angles of pronotum, if produced, not triangularly so, their spines longer (Figs 157, 166, 167, 177, 220). Length of antennal segment I divided by width of head including eyes greater than 0.80 36
- 35 Abdominal spines slightly shorter (Fig. 233). Body and appendages with all erect hairs shorter than transverse dorsal diameter of eye. (Highlands of north-east and central Africa) *C. alpica* (Bergróth) (p. 77)
- Abdominal spines slightly longer (Fig. 234). Many erect hairs on head, thorax and appendages as long as transverse dorsal diameter of eye (e.g. pubescence of scutellum, Fig. 232). (Cameroun) *C. montana* sp. n. (p. 80)
- 36 Antennal segment I very long, its length greater than 1.3 times width of head including eyes. Posterior tibia very weakly arcuate at base (Fig. 185), more than 0.75 times length of posterior femur. (Southern Africa) *C. marmorata* sp. n. (p. 63)
- Antennal segment I shorter than 1.25 times width of head including eyes or, if longer, then posterior tibia more strongly arcuate at base and not exceeding 0.70 times length of posterior femur 37
- 37 Posterolateral angles of abdominal sternites very weakly produced (Fig. 154). Head elongate (as in *ruandana*, Fig. 137). (Zambia) *C. bovilla* sp. n. (p. 54)
- Posterolateral angles of abdominal sternites more strongly produced (Figs 158, 169, 179, 224). Head less elongate 38
- 38 Male genital capsule with tongue narrowly triangular. (Madagascar). *C. pusilla* sp. n. (p. 56)
- Male genital capsule with tongue of various shapes but never narrowly triangular. (Not in Madagascar) 39
- 39 Pronotum with posterolateral angles rather strongly produced (Fig. 220). Male genital capsule with tongue bifid 40
- Pronotum with posterolateral angles weakly produced (Figs 166, 167, 175, 177). Male genital capsule with tongue entire 41
- 40 Length greater than 7.5 mm. Lobes of tongue of male genital capsule laminar, externally and apically deflexed (Fig. 221). (Widespread in Africa) *C. wittei* (Schouteden) (p. 74)

- Length less than 7.5 mm. Lobes of tongue of male genital capsule cylindrical (Fig. 222). (Uganda, Zaire) *C. neavei* sp. n. (p. 77)
- 41 Posterior tibia not arcuate at base. Antennal segment I with many outstanding hairs longer than diameter of segment. Tongue of male genital capsule apically rounded (Fig. 170). (Southern Africa) *C. strabo* sp. n. (p. 57)
- Posterior tibia gently or strongly arcuate at base. Antennal segment I with no hairs as long as its diameter 42
- 42 Posterior tibia gently arcuate at base. Tongue of male genital capsule narrow, truncate (Fig. 174). (Southern Africa) *C. pabo* sp. n. (p. 59)
- Posterior tibia strongly arcuate at base (as in *C. simillima*, Fig. 212). Tongue of male genital capsule broad, mucronate (Fig. 181). (Widespread in Africa) *C. spiniscutis* (Bergróth) (p. 60)

Descriptions of species

The *tuberculicollis*-group

Antennifer with apical process short, porrect; metathoracic peritreme with dorsal ridge bilobed or entire; male genital capsule with tongue entire; lip of genital capsule not completely filling posterior emargination in posterior view; pubescence of anterior, declivent area of pronotum uniform with that of posterior, horizontal area.

Clavigralla tuberculicollis (Reuter) **comb. n.**

(Figs 9–18)

Acanthomia tuberculicollis Reuter, 1887 : 90. Holotype ♀, MADAGASCAR [destroyed].

Length: ♂, 9.7–10.8 mm, mean 10.2 mm (n = 7); ♀, 11.0–11.5 mm, mean 11.3 mm (n = 5). Body robust, connexivum broad.

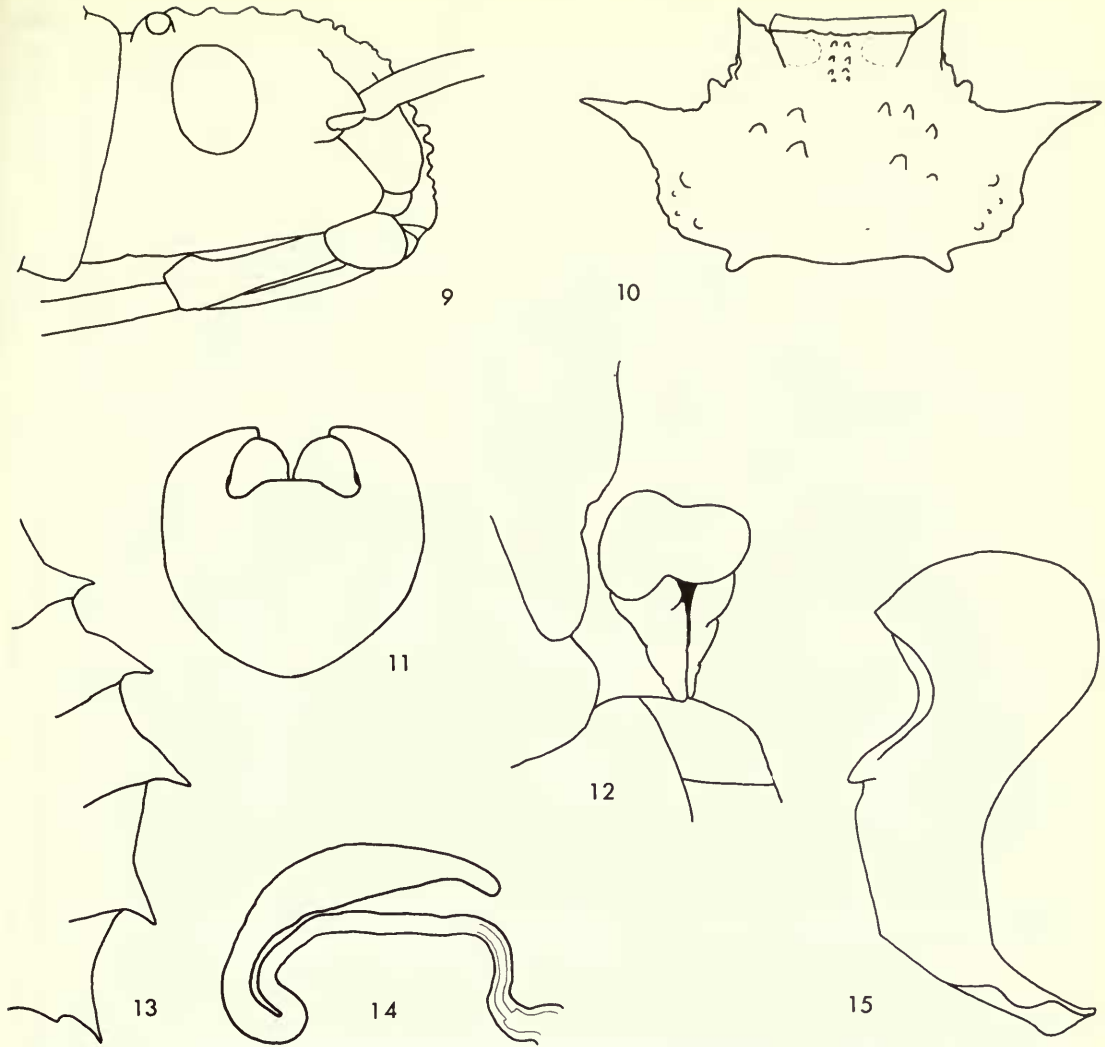
Antennifers strongly divergent, outer apical angle of each with a well-developed, porrect, triangular process (Fig. 9). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.91 : 0.83 : 0.83, in female about 1.00 : 0.92 : 0.84 : 0.71. Length of antennal segment I divided by width of head including eyes in male 1.23–1.28, mean 1.26 (n = 7), in female 1.29–1.44, mean 1.35 (n = 4). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.89 : 0.57 : 0.88.

Pronotum (Fig. 10) strongly declivent, disc tuberculate, sublateral pair of spines very prominent and robust, posteriorly with a raised ridge parallel to posterior margin, the ridge expanded medially to form a low boss. Width of pronotum across apices of posterolateral spines divided by width of head including eyes in male 2.67–2.91, mean 2.84 (n = 7), in female 2.67–3.21, mean 2.94 (n = 4). Scutellum strongly convex, disc with a pair of prominent tubercles, apex elevated slightly and knobbed. Metathoracic scent-gland peritreme (Fig. 12) with dorsal ridge bilobed, anterior lobe slightly larger than posterior. Corium with apex slightly produced, at rest reaching level of suture between laterotergites V and VI. Anterior and intermediate femora each with a single, strong, subapical spine beneath. Posterior femur subapically with a rather small major spine followed after a short space by a larger major spine and a terminal series of 4 spines decreasing in length towards apex of femur. Posterior tibia almost straight, about 0.88 times length of posterior femur.

Abdominal sterna III–VII with posterolateral angles produced into broad, triangular teeth (Fig. 13). Male genital capsule (Fig. 11) with lip small, not filling posterior emargination, tongue long and narrowly triangular. Paramere (Fig. 15) broad and flattened. Aedeagus (Figs 16–18) with conjunctival lobes all membranous; dorsomedian and intermediate dorsal lobes broad, low, M-shaped, distal dorsolateral lobes long, distal dorsomedian lobe narrow, finger-like, small, proximal ventrolateral lobes present, distal ventrolateral lobes long, apical ventral lobes large. Female sternum VII narrow, especially in midline, left for about one-third of its length. Second valvula truncate apically. Sclerites of gynatrial wall simply V-shaped. Spermatheca (Fig. 14) with bulb long and narrow, duct rather short and scarcely convoluted.

Antennal segments I–III minutely granulate; head granulate, more coarsely in dorsal midline. Pronotum sparsely punctate posteriorly, granulate anteriorly, tuberculate along lateral and posterolateral margins. Scutellum, apart from the two prominent tubercles, and thoracic pleura sparsely punctate-granulate. Thoracic sterna minutely rugose. Legs almost smooth, posterior femora with a few shallow punctures in apical half. Clavus and corium except for apex evenly punctate, corium with veins anteriorly in basal half bearing a few large granules. Abdominal sterna and laterotergites neither granulate nor punctate.

Antennae with short to moderately long, suberect, brown pubescence, segment I also with short, adpressed, silvery hairs, head with both of these types of pubescence throughout. Pronotum, scutellum and



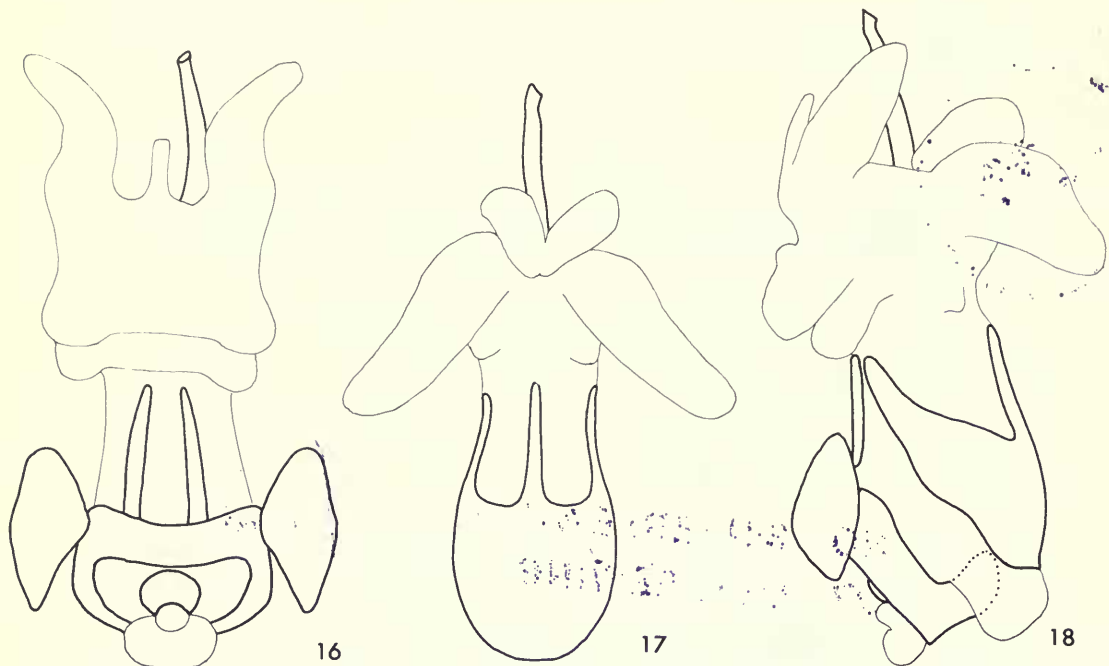
Figs 9-15 *Clavigralla tuberculicollis*. (9) head, right lateral view; (10) pronotum, dorsal view; (11) genital capsule with parameres, posterior view; (12) left metathoracic peritreme, lateral view; (13) lateral margins of ♂ abdominal sternites III-VII, ventral view; (14) spermatheca; (15) paramere, dorsal view.

thoracic pleura with moderately long to long, erect, brown hairs and a thin covering of adpressed, silvery hairs, the latter type only present on thoracic sterna. Legs with short to long, semidecumbent to erect, pale or dark brown hairs, femora and tibiae, especially near base, with sparse, adpressed, silvery hairs also. Clavus and corium with short, suberect, pale brown hairs. Abdominal sternites with sparse, moderately long, erect, pale hairs and a thin covering of short, adpressed, silvery hairs; laterotergites with short, slightly crisped, semidecumbent, pale brown hairs.

Colour generally dark brown to piceous. Antennae pale brown with obscure stramineous rings. Tarsi, two broad rings on each tibia, some large spots in apical half of each femur and most of basal half of all femora pale brown to stramineous, legs otherwise piceous. Clavus and corium mid-brown, apex of corium piceous with small cream spots, apical margin of corium cream with a few piceous spots. Punctures of clavus and corium piceous. Membrane fuscous with indistinct, paler blotches. Abdominal sterna with creamy yellow markings which are most extensive on disc of sternites IV and V and sides of VII. Laterotergites IV, V and VI each with a transverse cream-coloured band, VII almost entirely cream.

REMARKS. This species is distinguished from all others with a short, non-deflexed process at the apex of the antennifer by its large size and dark coloration. It is the only species of its group so far recorded from Madagascar. The unique holotype, collected in Nossibé, was deposited by Reuter in the Naturhistorisches Museum, Lübeck. The entomological collections of this museum were totally destroyed by bombing and subsequent fire on 28–29 March 1942 (Anonymous, 1947).

DISTRIBUTION. Madagascar.



Figs 16–18 *Clavigralla tuberculicollis*. (16) aedeagus and basal apparatus, dorsal view; (17) aedeagus, ventral view; (18) aedeagus and basal apparatus, left lateral view.

MATERIAL EXAMINED

Madagascar: 1 ♂, 1 ♀, 1900 (*Fairmaire*) (MNHN, Paris); 1 ♂, 3 ♀, Diego Suarez, 1893 (*Ch. Alluaud*) (MNHN, Paris and BMNH, London); 3 ♂, Région du Sud, Andrahomana, 1901 (*Alluaud*) (MNHN, Paris and BMNH, London); 1 ♂, Bezanozano, 1898 (*Noualhier*) (MNHN, Paris); 1 ♂, Ambovombe, 1925 (*R. Decary*) (BMNH, London); 1 ♀, Région du Sud de l'Isle, Bekily, viii.1936 (*A. Seyrig*) (MNHN, Paris).

Clavigralla leroyi (Schouteden) comb. n.

(Figs 19–26)

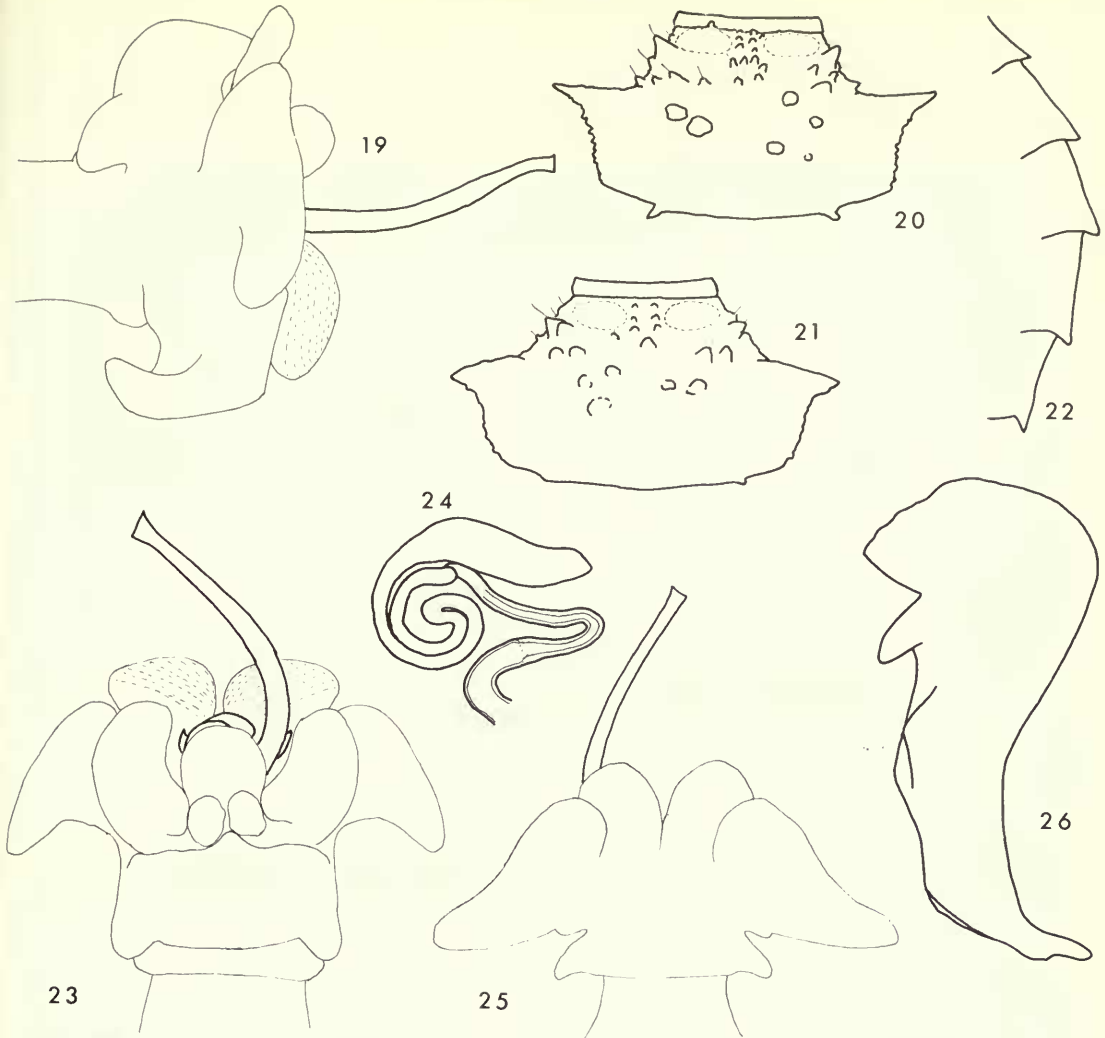
Acanthomia leroyi Schouteden, 1938 : 290. LECTOTYPE ♂, ZAIRE (MRAC, Tervuren), here designated [examined].

Acanthomia mixta Schouteden, 1938 : 290–291. LECTOTYPE ♂, ZAIRE (MRAC, Tervuren), here designated [examined]. Syn. n.

Length: ♂, 8.3–9.8 mm, mean 9.0 mm ($n = 28$); ♀, 8.8–10.8 mm, mean 9.5 mm ($n = 25$).

Antennifers strongly divergent, process at external apical angle well developed, triangular, porrect. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.92 : 0.76 : 0.91, in female about 1.00 : 0.92 : 0.78 : 0.85. Length of segment I divided by width of head including eyes in male 1.03–1.25, mean 1.15 ($n = 27$), in female 1.07–1.44, mean 1.19 ($n = 23$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.85 : 0.52 : 0.79.

Pronotum moderately strongly and convexly declivent, disc with a stout, conical tubercle near mid-point of each anterolateral margin and several other spines and tubercles of similar size, the more



Figs 19–26 *Clavigralla leroyi*. (19) conjunctiva, left lateral view; (20) pronotum of ♂ lectotype of *mixta*, dorsal view; (21) pronotum of ♂ lectotype of *leroyi*, dorsal view; (22) lateral margins of ♀ abdominal sternae III–VII, ventral view; (23) conjunctiva, dorsal view; (24) spermatheca; (25) conjunctiva, ventral view; (26) left paramere, dorsal view.

posterior ones being blunt, apically rounded and approximately hemispherical in form. Prescutellar spines small or absent. Posterolateral angles moderately produced, posterolateral spines variable in length, thickness and direction, generally slightly anterolaterally directed if longer and thinner (Fig. 20) and slightly posterolaterally directed if shorter and thicker (Fig. 21), but various intermediates and combinations of features occur. Width of pronotum across apices of posterolateral spines divided by width of head including eyes in male 2.14–2.65, mean 2.35 ($n = 27$), in female 2.24–2.95, mean 2.43 ($n = 25$). Posterolateral spines in male more usually directed forwards and in female more usually directed laterally, but not consistently so in either sex. Scutellum distinctly but rather weakly convex, granulate. Dorsal ridge of metathoracic scent-gland peritreme bilobed, the lobes subequal in size or the anterior one slightly larger. Apical margin of corium only very shallowly concave, apex scarcely produced, when at rest attaining only level of suture between laterotergites V and VI or slightly exceeding this. Anterior and intermediate femora each with 1 small subapical spine beneath, posterior femur with 2 major subapical spines, the more basad less than half the length of the other, with or without a small spine or tubercle between them and

with an apical series of 4 spines, very rarely a third, minute, major spine is discernible basad of the sub-apical group. Posterior tibia straight, about 0.93 times length of posterior femur.

Abdominal sternites III–VII with posterolateral angles prominent as small, triangular spines (Fig. 22). Male genital capsule with lip shallow, obtusely angled or truncate, not filling posterior emargination, tongue triangular, entire. Paramere (Fig. 26) with the two teeth on inner side about equally prominent and forming a slightly acute angle between themselves. Conjunctiva (Figs 19, 23, 25) with dorsomedian lobe low, simple; intermediate dorsal lobe large, its lateral angles slightly prominent and its apex triangularly produced posteriad; distal dorsomedian lobe small, bifid; distal dorsolateral lobes deflexed; posterior face of conjunctiva with a single, subspherical lobe above the large, paired sclerites protecting the coiled base of the vesica; apical ventral lobes large, with dorsal surface lightly sclerotized and ornamented with numerous small warts; distal ventrolateral lobes large; paired ventral lobes present at level of dorsomedian lobe. Vesica with non-coiled portion about as long as conjunctiva, sclerites protecting its base about equal in length to straps of ejaculatory reservoir complex. Female sternum VII cleft along distal third of ventral midline. Spermatheca (Fig. 24) with duct nearest to bulb curving in three-quarters of a circle round towards bulb, then turning back on itself and forming another three-quarters circle closely appressed to inside of first loop, followed by a small kink and a U-shaped loop; thin-walled portion of duct not quite half length of bulb.

Head and antennal segment I weakly granulate, antennal segments II and III minutely granulate. Pronotum bearing granules of a wide range of sizes, disc punctuate. Scutellum with large granules mostly arranged in two parallel, longitudinal bands. Thoracic pleura granulate-punctuate. Thoracic sterna and abdominal sternites and laterotergites almost lacking in macrosculpture apart from weak transverse striations on abdominal sternites. Abdominal tergites I and II transversely striate, III with a group of about 12 large, often confluent punctures in middle, IV–VII with smaller punctures throughout, decreasing in size and density laterally and posteriorly. Clavus seriatly punctate in about four rows, corium punctate throughout, seriatly so basally, veins in basal half granulate. Femora very weakly and tibiae minutely granulate.

Pubescence all white to silvery, fine. Short, decumbent pubescence present on head, pronotum, scutellum, thoracic pleura and sterna, abdominal sterna and, sparsely, on femora and antennal segment I, often organized into a conspicuous white line along midline of posterior lobe of pronotum and scutellum. Short, semidecumbent pubescence present on abdominal laterotergites, clavus and corium. Rather short, suberect pubescence present on head, pronotum, scutellum and all antennal segments, rostrum and legs. Longer, suberect to erect pubescence also present on antennal segment I, dorsum of head, femora, tibiae, tarsi, pronotum and abdominal sterna.

Colour generally grey-brown, mottled. Dorsum of head, pronotum and scutellum reddish brown; head with a pair of cream-coloured stripes running along inner border of compound eyes and thence towards posterior margin of head, slightly convergent posteriorly and usually edged narrowly piceous; ocellar tubercles often piceous. Larger spines and tubercles of pronotum and often lateral margins and raised apex of scutellum also piceous. Head laterally and ventrally red-brown but usually largely or almost entirely covered with piceous markings. Thoracic pleura red-brown with piceous markings; sterna entirely piceous. Abdominal sterna red-brown with numerous, variable, cream and piceous markings, sterna III–VII almost always with diagonal piceous and cream markings about half-way between midline and lateral margins. Laterotergites red-brown, each with a transverse pale cream band occupying the middle third. Clavus and corium pale grey-brown, corium with a few spots and granules brown, veins at and near its apical margin partly or largely cream; membrane slightly infusate, veins brown, interrupted by unpigmented areas. Antennae pale flavous, often tinged rufous, segments I–III typically each with a line along dorsolateral surface and an apical annulus not continuous with the line red-brown to piceous or black, these darker antennal markings sometimes more extensive and sometimes absent. Legs stramineous; femora heavily marked with irregular, red-brown and frequently also piceous spots, especially in apical two-thirds; tibiae each with a basal and apical annulus and a median dorsal spot or complete annulus red-brown or piceous; base and apex of first and second tarsal segments and whole of third tarsal segment of all legs red-brown.

Egg with 9 aeromicropyles (3 ovarian eggs taken from a single female).

REMARKS. There is considerable but continuous variation in the shape of the pronotum and the extent of piceous markings, which may be completely absent. These characters vary independently. The complex form of the conjunctiva and that of the spermatheca, however, show little variation, suggesting that the material examined comprises a single, variable species rather than a complex of closely similar species. The type-series of *Acanthomia leroyi* comprises specimens with short, laterally directed pronotal posterolateral spines (Fig. 21) and about average intensity

and extent of the piceous markings while the type-specimens of *A. mixta* have longer, anterolaterally directed pronotal posterolateral spines (Fig. 20) and more extensive piceous markings.

DISTRIBUTION. Central and West Africa, usually at high altitudes.

MATERIAL EXAMINED

Acanthomia leroyi Schouteden, lectotype ♂, Zaire: Ituri, Nioka, vii.1934 (*J. V. Leroy*) (MRAC, Tervuren).
Acanthomia mixta Schouteden, lectotype ♂, Zaire: Ituri, Nioka, vii.1934 (*J. V. Leroy*) (MRAC, Tervuren).
Guinea: 2 ♀, Mt To, 1660 m, 28.vi.1954 (BMNH, London). **Sudan:** 1 ♂, W. Darfur, S. Jebel Murra, Dimbiti, 7600 ft (2350 m), 28.v.1932 (*M. Steele*) (BMNH, London). **Ethiopia:** 1 ♂, Lake Zwai, v.1914 (*O. Kovacs*); 1 ♂, Maraco, 8.iv.1915 (*Kovacs*); 1 ♀, Urgessa, R. Simu, 2300 ft (700 m), 3.v.1905 (*Ph. C. Zaphiro*) (BMNH, London). **Uganda:** 1 ♀, Kampala, 15–30.x.1917 (*C. C. Gowdey*) (BMNH, London).
Burundi: 1 ♂, Mugeru, end of 1965 (*J. J. Rwabunza*) (MRAC, Tervuren). **Zaire:** 1 ♂, 2 ♀, Ituri, Nioka, vii.1934 (*J. V. Leroy*) (paralectotypes of *Acanthomia leroyi* Schouteden) (MRAC, Tervuren); 1 ♂, 2 ♀, Ituri, Nioka, vii.1934 (*J. V. Leroy*) (paralectotypes of *Acanthomia mixta* Schouteden) (MRAC, Tervuren); 1 ♂, Kinda, N'Zazi, 15.i.1949 (*R. P. Lefebvre*); 1 ♂, Lualaba, Jadotville, Kakanda, vii–viii.1953 (*R. P. Th. de Caters*); 1 ♀, Bas-Congo, Lemfu, x–xii.1944 (*Rév. P. De Beir*); 1 ♂, Lulua, Kapanga, ii.1933 (*F. G. Overlaet*); 3 ♀, Lulua, Kapanga, 14.xii.1932, i.1933 and iii.1933 (*Overlaet*); 1 ♂, Kivu, Mulungu, 1939 (*Hendrickx*); 1 ♀, Kivu, Mulungu, Tshibinda, xi.1951 (*P. C. Lefèvre*) (MRAC, Tervuren); 1 ♀, Lubumbashi, 10.iv.1939, at light (*H. J. Brédo*); 1 ♀, Kaniama, 8.iv.1939 (*Brédo*) (IRSNB, Brussels); 35 ♂, 44 ♀, Faradje, 29° 40' E, 3° 40' N, i.1913 (*Lang & Chapin*) (AMNH, New York); 1 ♂, Katanga, Lufira River, 31.viii.1907, 3500 ft (1050 m) (*Neave*); 1 ♂, 1 ♀, Katanga, Kambove, 4000–5000 ft (1200–1500 m), 23.iv.1907 and 21.vi.1907 (*Neave*); 1 ♂, Lualaba River, 24.v.1907, 2500–4000 ft (750–1200 m) (*Neave*); 1 ♀, SE. Katanga, 4000 ft (1200 m), i.xii.1907 (*Neave*); 1 ♀, Kando, 9.ix.1944 (BMNH, London), **Angola:** 1 ♂, Duque de Braganca Falls, 11–12.iii.1972, by sweeping (*BMNH Southern Africa Expedition*) (BMNH, London). **Zambia:** 4 ♂, 1 ♀, Upper Kalungwisi Valley, 4200 ft (1280 m), 11.ix.1908 (*S. A. Neave*); 1 ♂, Lower Kalungwisi Valley, 3500 ft (1050 m), in dense forest, 15.ix.1908 (*Neave*); 1 ♂, Chisinga Plateau, Kalungwisi District, 4500 ft (1350 m), 23.ix.1908 (*Neave*); 3 ♂, 2 ♀, same locality, 25.ix.1908 (*Neave*) (UM, Oxford). **Malawi:** 1 ♂, Mlanje Plateau, 6500 ft (2000 m), 18.xii.1913 (*S. A. Neave*); 1 ♀, Ft Jameson to Dowa, 4000–4500 ft (1200–1350 m), 4–9.x.1910 (*Neave*); 1 ♀, Kotakota, xi.1910 (*J. E. S. Old*) (BMNH, London).

Clavigralla zambiae sp. n.

(Figs 27–30)

Length: ♂, 8.2 mm ($n = 1$); ♀, 8.4 mm ($n = 1$). Similar to *C. leroyi* but smaller and body slightly more depressed. Known from only one specimen of each sex.

Antennifers strongly divergent, external apical processes porrect, triangular. Ratio of lengths of antennal segments I : II : III : IV in male 1.00 : 0.95 : 0.79 : 0.84, in female 1.00 : 0.97 : 0.74 : (segment IV missing). Length of segment I divided by width of head including eyes in male 1.08, in female, 1.04. Ratio of lengths of rostral segments I : II : III : IV in male 1.00 : 0.87 : 0.49 : 0.78.

Pronotum (Fig. 27) moderately strongly declivent, posterolateral angles scarcely produced, posterolateral spines short, width across tips of spines divided by width of head including eyes in male 1.94, in female 2.10. Prescutellar spines absent. Dorsal ridge of metathoracic peritreme bilobed.

Abdominal sternites III–VII with posterolateral angles (Fig. 29) much less strongly produced than in *leroyi*. Paramere (Fig. 30) with teeth on inner side very unequal in length, apical tooth much the more prominent of the two. Conjunctiva (which could not be fully inflated) apparently similar to that of *leroyi*, having apical ventral lobes large and ornamented with small warts. Vesica with non-coiled portion as long as expanded conjunctiva and phallosome together. Spermatheca (Fig. 28) with duct near bulb following several short convolutions, then with short U-shaped portion.

Sculpture, pubescence and coloration similar to *leroyi*.

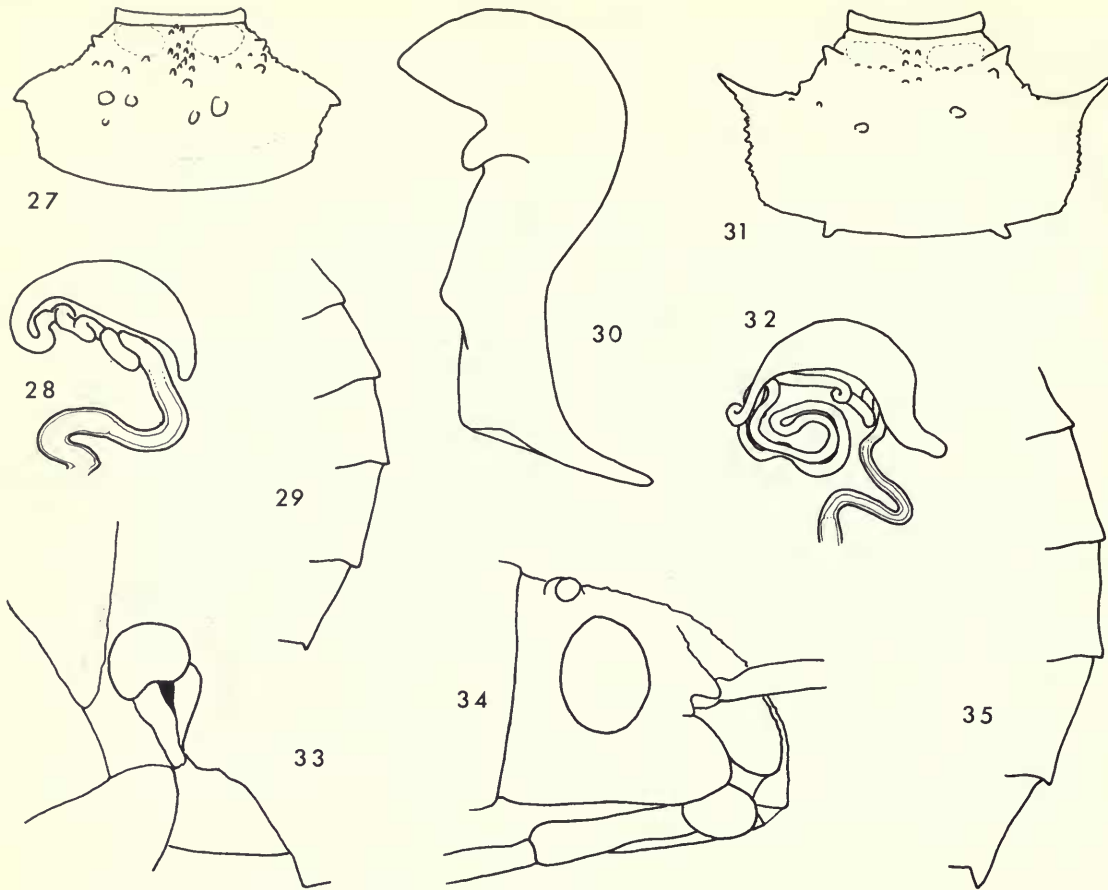
REMARKS. Distinguished from *C. leroyi* by the generally shorter antennae, narrower pronotum, longer vesica and different configuration of spermathecal duct.

DISTRIBUTION. So far known only from Zambia, a country with a large number of endemic species of very restricted distribution.

MATERIAL EXAMINED

Holotype ♀, **Zambia:** Mpika, 4700 ft (1450 m), 1904 (*F. H. Mellard*) (BMNH, London).

Paratype. **Zambia:** 1 ♂, Abercorn, x.1943 (*H. J. Brédo*) (IRSNB, Brussels).



Figs 27–35 *Clavigralla* species. (27) *zambiae*, pronotum of holotype ♂, dorsal view; (28) *zambiae*, spermatheca; (29) *zambiae*, lateral margins of abdominal sternites III–VII, ventral view; (30) *zambiae*, paramere of holotype, dorsal view; (31) *uelensis*, pronotum of ♀, dorsal view; (32) *uelensis*, spermatheca; (33) *uelensis*, left metathoracic peritreme, lateral view; (34) *uelensis*, head, right lateral view; 35 *uelensis*, lateral margins of abdominal sternites III–VII, ventral view.

Clavigralla uelensis (Schouteden) comb. n., stat. n.

(Figs 31–35)

Acanthomia mixta var. *uelensis* Schouteden, 1938 : 291. LECTOTYPE ♀, ZAIRE (MRAC, Tervuren), here designated [examined].

Length: ♀, 9.6–9.7 mm, mean 9.6 mm ($n = 5$). Male unknown. Very similar in size, build and appearance to *C. leroyi*.

Antennifers strongly divergent, external apical processes large, triangular, porrect (Fig. 34). Ratio of lengths of antennal segments I : II : III : IV about 1.00 : 0.88 : 0.81 : 0.87; length of segment I divided by width of head including eyes 1.10–1.23, mean 1.15 ($n = 5$). Ratio of lengths of rostral segments I : II : III : IV about 1.00 : 0.84 : 0.54 : 0.77.

Pronotum (Fig. 31) with posterolateral angles moderately produced, posterolateral spines slender, directed obliquely forwards; width across apices of spines divided by width of head including eyes 2.27–2.57, mean 2.40 ($n = 5$). Metathoracic scent-gland peritreme with dorsal ridge entire, not bilobed (Fig. 33). Posterior femur with first subapical spine very short, much smaller than the second, or only one, long, subapical spine present, not preceded by smaller spines or tubercles and followed by a terminal series of four spines. Length of posterior tibia divided by that of posterior femur 0.86–0.92, mean 0.88 ($n = 3$).

Posterolateral angles of abdominal sternites III–VII (Fig. 35) less prominent than those of *leroyi*. Spermatheca (Fig. 32) with duct long and loosely convoluted, thin-walled portion very short.

REMARKS. Differs from all other species by the combination of the porrect external apical process of the antennifer and the entire, not bilobed, dorsal ridge of the metathoracic scent-gland peritreme. Otherwise, in size, shape, sculpture, pubescence and coloration this species is very similar to *leroyi*, and it was originally described as a variety of *mixta*, synonymized above with *leroyi*.

DISTRIBUTION. Central Africa.

MATERIAL EXAMINED

Acanthomia mixta var. *uelensis* Schouteden, lectotype ♀, Zaire: Dungu, xi.1919 (*P. van den Plas*) (MRAC Tervuren).

Zaire: 3 ♀, Dungu, xi.1919 (*P. van den Plas*) (paratypes of *Acanthomia mixta* var. *uelensis* Schouteden) (MRAC, Tervuren). Central African Republic: 1 ♀, Bambari, i.1964. (*G. Pierrard*) (MRAC, Tervuren).

The *elongata*-group

Antennifer with outer apical process long, deflexed; metathoracic peritreme with dorsal ridge entire; male genital capsule with tongue entire; lip of genital capsule filling posterior emargination in posterior vein; pubescence of anterior, declivent area of pronotum almost uniform with that of posterior, horizontal part. Second valvula of ovipositor bearing at apex a usually bifid process. Pronotum with posterolateral angles usually strongly produced, tapering gradually into posterolateral spines.

Clavigralla hystrix Dallas comb. rev.

(Figs 36–42)

Clavigralla hystrix Dallas, 1852 : 512–513. Holotype ♂, SIERRA LEONE (BMNH, London) [examined].

Acanthomia hystrix (Dallas) Stål, 1873 : 83.

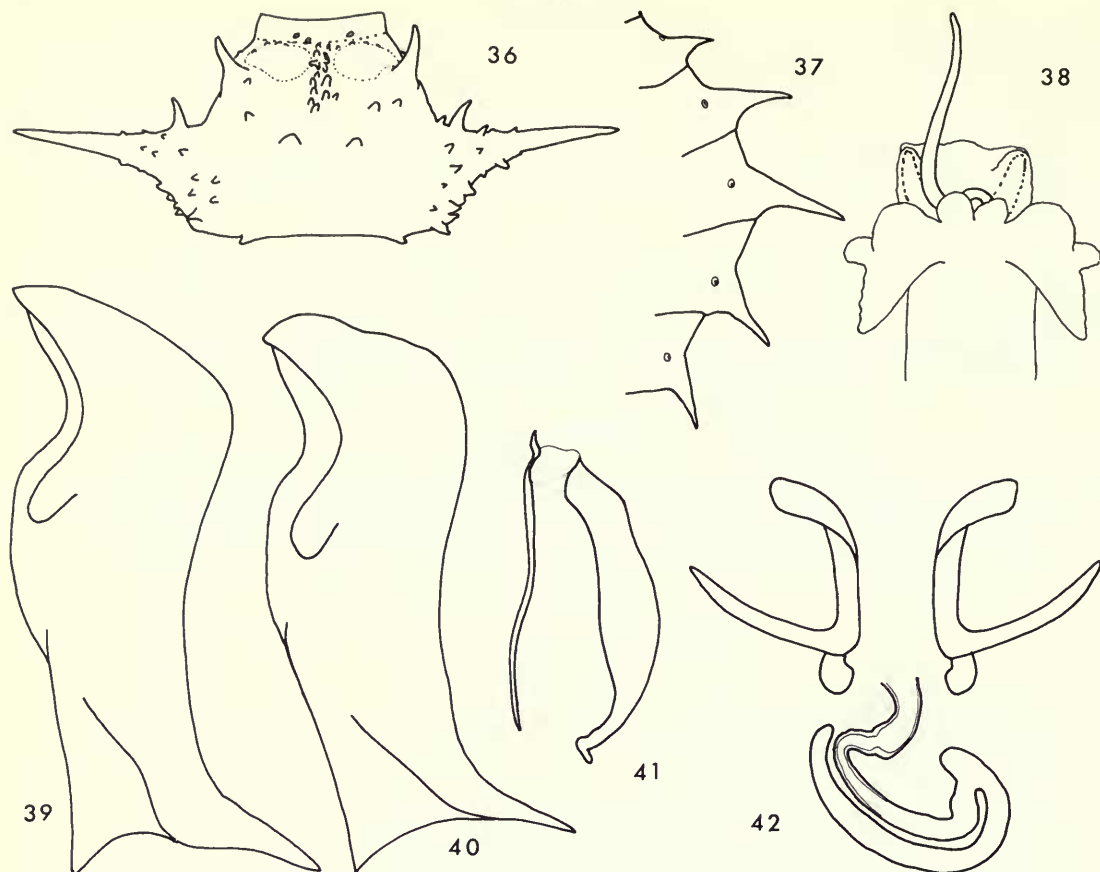
Length: ♂, 7.6–8.7 mm, mean 8.1 mm ($n = 28$); ♀, 8.3–9.8 mm, mean 9.0 mm ($n = 43$). Body robust, aspect very spinose, connexivum broad in middle, coloration very dark.

Antennifers rather strongly divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.67 : 0.69 : 0.62, in female about 1.00 : 0.68 : 0.70 : 0.61. Segments I and III gently curved. Length of segment I divided by width of head including eyes in male 1.81–2.26, mean 2.01 ($n = 28$), in female 1.72–2.08, mean 1.92 ($n = 41$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.83 : 0.51 : 0.79.

Pronotum (Fig. 36) moderately strongly declivent, posterolateral spines drawn out into very long, slender spines, with several prominent spines in the vicinity of the posterolateral angles, disc with a semi-circle of about six spines, the most anterior spine on each side (close to middle of lateral margins) very much more prominent than the rest, spines at prescutellar angles small. Width of pronotum across apices of posterolateral spines divided by width of head including eyes in male 2.78–3.68, mean 3.32 ($n = 23$), in female 3.10–3.95, mean 3.51 ($n = 35$). Scutellum strongly convex. Corium with apex slightly produced, at rest reaching to level of middle of laterotergite V. Anterior and intermediate femora each with one small subapical spine beneath, or that of intermediate femora absent, or, rarely, anterior femur with a second subapical spine proximal to and much smaller than the other. Posterior femur with two major spines, the more proximal about half as long as the other and separated from it by a row of about four small spines, apical series of four spines present. Posterior tibia gently bowed near base, its length divided by that of posterior femur in both sexes 0.85–0.97, mean 0.90 ($n = 68$).

Abdominal sternites III–VII with posterolateral angles produced into long, stout spines (Fig. 37). Male genital capsule with lip broad, tongue rather short. Paramere (Figs 39, 40) with apical margin weakly convex to straight and slightly emarginate in middle, varying slightly in the angle it forms with axis of shaft. Conjunctiva (Fig. 38) with distal ventrolateral lobes large, apical ventral lobes of moderate size, distal dorsolateral lobes obsolete, dorsomedian and distal dorsomedian lobes low. Female sternite VII deeply cleft. Second valvula (Fig. 41) with a single, narrow process at apex. Spermatheca (Fig. 42) with bulb narrow and duct short. Sclerites of dorsal wall of gynatrium (Fig. 42) with median, longitudinal arms broad, strongly divergent posteriorly.

Head granulate throughout, antennal segments I–III sparsely and minutely granulate. Pronotum in posterior half and all pleura coarsely punctate, pleura with a few granules or short, blunt spines. Scutellum very coarsely granulate. Clavus and corium coarsely and rather sparsely punctate, veins in basal two-thirds



Figs 36–42 *Clavigralla hystrix*. (36) pronotum, dorsal view; (37) lateral margins of abdominal sternites III–VII, ventral view; (38) conjunctiva and vesica, ventral view; (39) paramere, dorsal view, Uganda; (40) same, Zaire; (41) left second valvula, medial view; (42) sclerites of dorsal wall of gynatrium and spermatheca, dorsal view.

of corium granulate. Femora and tibiae almost obsoletely granulate. Thoracic and abdominal sterna impunctate, abdominal sternite VII shallowly and sparsely rastrate.

Head, antennae, rostrum and legs with short, decumbent, golden hairs and short, semidecumbent to suberect white hairs, the decumbent pubescence dense on head, sparse elsewhere, semierect pubescence longer on tibiae and tarsi. Pronotum and scutellum with short, dense, decumbent, golden pubescence and fairly short, erect, sparse, brown pubescence. Clavus and corium with short, decumbent, golden pubescence and short, crisped, semidecumbent, white pubescence intermingled. Thoracic pleura, abdominal sternites and laterotergites with short, dense, decumbent, golden pubescence and short, dense, semidecumbent, white pubescence intermingled. Thoracic sterna with decumbent, golden pubescence only.

Colour dark brown to piceous. Antennal segments I–III each with a more or less obscure pale annulus distad of middle, that on segment II the most distinct of the three. Antennal segment IV ivory-white, not at all to heavily infuscate. Tibiae each with two pale brown to stramineous annuli, the distal annulus frequently continuous to apex of tibia. First segment of all tarsi stramineous above except at extreme base and apex. Posterior femur with a pale annulus basad of middle. Midline of anterior half of pronotum broadly darker than ground colour. Abdominal sternites and laterotergites with obscurely paler areas. Corium stramineous, heavily spotted with brown and with a more extensive patch of brown on disc. Membrane dark brown with scattered white spots and a white crescent in proximal angle. Distal margin of corium stramineous, forming a large, pale capital A together with the white crescent on membrane when elytra are at rest.

REMARKS. This species varies in the length of its spines and appendages and to a lesser degree in colour in different parts of its range. The greatest development of the pronotal spines is found in the centre of its range, in Zaire. Means of the ratio pronotal width/head width in various parts of the range of the species are as follows: West Africa (Sierra Leone to Nigeria): ♂, 3·25; ♀, 3·31; Cameroun: ♂, 3·38; ♀, 3·61; Zaire: ♂, 3·44; ♀, 3·67; East Africa (Uganda and Kenya): ♂, not available; ♀, 3·19. The ratio length of antennal segment I/head width decreases from west to east as follows: West Africa: ♂, 2·11; ♀, 1·99; Cameroun: ♂, 1·97; ♀, 1·95; Zaire: ♂, 1·89; ♀, 1·84; East Africa: ♂, 1·87; ♀, 1·74. Antennal segments II and III maintain their length relationship with segment I throughout the range of the species but segment IV in both sexes averages 0·66 times the length of segment I in Zaire and 0·60 elsewhere. Antennal segment IV is more heavily infusate in examples from Zaire and East Africa than in those from Cameroun and West Africa and the more distal pale annulus of the tibiae is more often continuous to the apex of each tibia in Zaire and East Africa than in Cameroun and West Africa. Paramere shape does not appear to vary systematically from place to place. The egg is figured by Cobben (1968 : 97, fig. 85).

DISTRIBUTION. Equatorial Africa, from Sierra Leone to Uganda, in forest areas.

MATERIAL EXAMINED

Clavigralla hystrix Dallas, holotype ♂, Sierra Leone (*D. J. Morgan*) (BMNH, London).

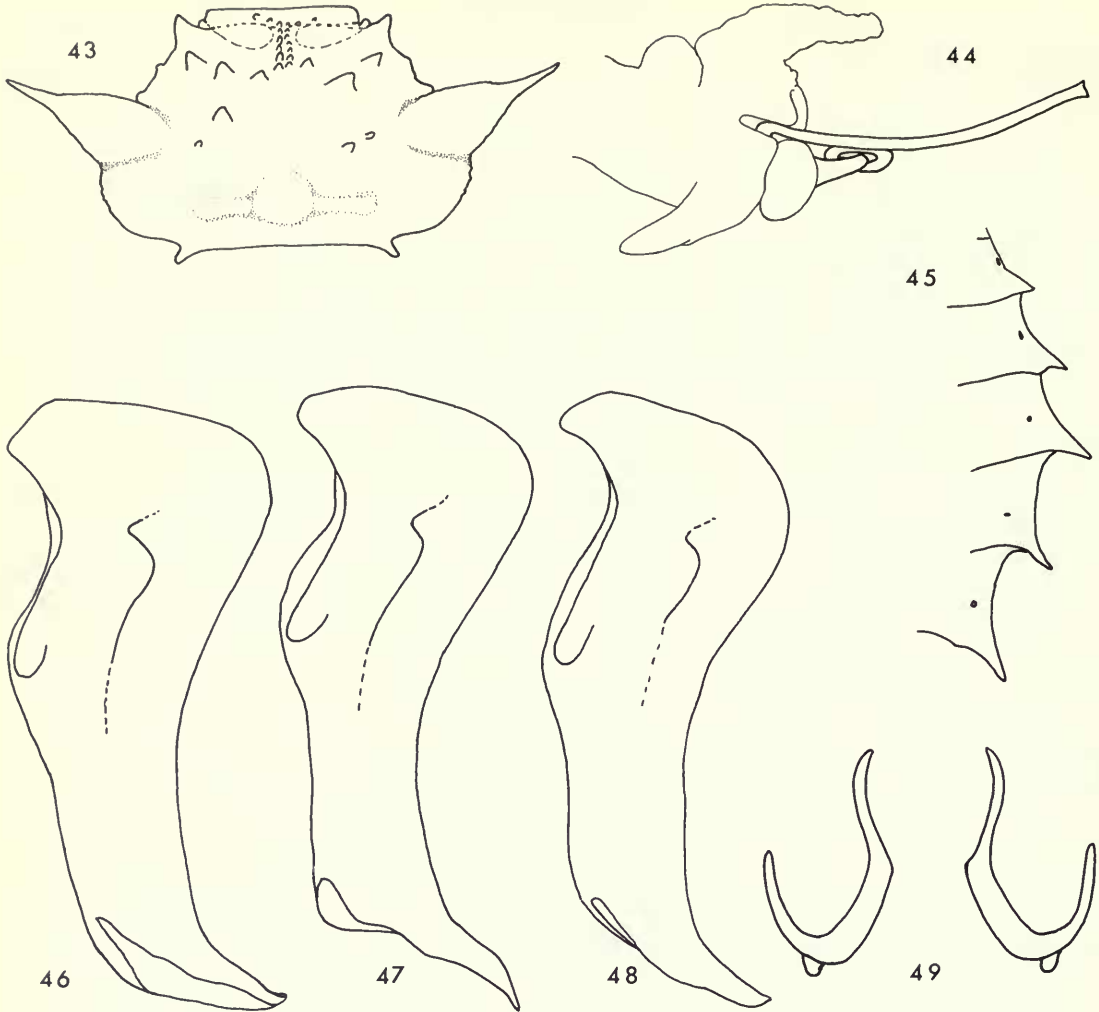
Sierra Leone: 1 ♂, Njala, viii.1928 (*E. Hargreaves*) (BMNH, London). **Liberia:** 1 ♀, 32 km S. of Voinjama, 13.viii.1966 (*E. S. Ross, K. Lorenzeu*) (CAS, San Francisco). **Ivory Coast:** 1 ♂, Adiopodoumé, iv–v.1964 (*R. H. Cobben*) (BMNH, London); 1 ♂, Akoupe, 25 km N. of Abidjan, x.1961 (*J. Decelle*); 1 ♀, Akoupe, v.1961 (*Decelle*); 2 ♂, 5 ♀, Mouyassoué, Aboisso, xii.1962 (*Decelle*) (MRAC, Tervuren). **Ghana:** 1 ♀, 'Owealé Akem, Aschanti-Guinée' (IRSNB, Brussels); 1 ♂, 1 ♀, Aburi (*A. R. Gould*); 1 ♀, ENE. of Tafo, 26.iii.1948, on herbage (BMNH, London); 1 ♀, Tafo, 14.x.1966, on cocoa, by pyrethrum knock-down (*R. Kumar*); 1 ♀, Adukrom, 14.x.1967 (*D. Leston*); 1 ♂, 1 ♀, Kukurantumi, 13.i.1968, on Leguminosae (*Leston*); 3 ♂, Tafo, 13.v.1966, 3.i.1967, 11.i.1968 (*Kumar*); 1 ♂, Mt Atewa, 22.x.1967, in secondary forest (*Leston*); 1 ♂, Adonkwanta, 1.viii.1967 (*Leston*); 1 ♂, Volta River Forest Reserve, 5.ix.1965 (*Leston*) (UG, Legon). **Togo:** 1 ♂, Missahoué, 650 m, vi.1963 (*Mme Y. Schach*) (MRAC, Tervuren). **Nigeria:** 1 ♀, Old Calab[ar] (*J. Gray*) (BMNH, London); 1 ♀, Lagos Colony, Isheri, 9–10.iv.1949 (*Borys Malkin*); 1 ♀, Oyo Prov., Ogbomosho, 12.xii.1948 (*Malkin*) (CAS, San Francisco). **Cameroun:** 1 ♂, 4 ♀, Lolodorf (*G. Schwab*); 4 ♀, Metet (*Schwab*) (AMNH, New York); 1 ♀, Mukonje Farm (*F. Rohde*) (IRSNB, Brussels); 1 ♂, 3 ♀, Nkolbisson, Nyong-Sanaga, x.1963 (*L. G. Segers*) (MRAC, Tervuren); 1 ♂, 1 ♀, Escalera; 2 ♀, Batouri District, 3° 45' N, 13° 45' E, 750 m, 1.v–6.vi.1935 (*F. G. Merfield*) (BMNH, London); 9 ♂, 8 ♀, 1 V instar nymph, Victoria Div., Mabete, 24.v–7.vi.1949 (*B. Malkin*); 3 ♂, Victoria, Mabete, 15.vi.1949 (*Malkin*); 11 ♂, 10 ♀, 1 V instar nymph, Victoria Div., Mabeta, vii–viii.1949 (*S. Tita*); 1 ♂, Victoria Div., Muyuka, 24–29.vi.1949 (*B. Malkin*); 4 ♂, 3 ♀, Sasse, Buea, iv–v.1951 [no collector stated]; 1 ♀, Sasse, Sappo, 22–26.ii.1952 (*S. Tita*); 1 ♂, 2 ♀, Sappo, near Buea, iii.1951 (*S. Tita*); 1 ♂, 2 ♀, Mamfe, 22–24.i.1949 (*B. Malkin*) (CAS, San Francisco). **Zaire:** 1 ♂, Luhoho River, Bunyakiri, 1100 m, 6.ix.1957 (*E. S. Ross, R. E. Leech*) (CAS, San Francisco); 1 ♂, 1 ♀, Ituri Forest, 40 miles (64 km) NNE. of Beni, 3000 ft (900 m), 12–10.ix.1959 [sic], in indigenous forest (*Cambridge E. African Exped.*), 1 ♀, Mt Hoyo, 1° 10' N, 30° 0' E, 3000 ft (900 m), 14–16.ix.1959, in forest clearings (*Cambridge Exped.*) (BMNH, London); 1 ♂, 1 ♀, Medje, 2° 25' N, 27° 15' E, vi.1914 (*Lang & Chapin*); 1 ♂, Medje, vii.1910 (*Lang & Chapin*); 1 ♀, Kisangani (as Stanleyville), iii.1915 (*Lang & Chapin*) (AMNH, New York), 2 ♂, Bambesa, 17.vi.1937, 26.i.1939 (*J. Vrydagh*); 2 ♀, Bambesa, 29.vi.1937, 20.xii.1939 (*Vrydagh*); 1 ♂, Bukolela, 1938 (*R. Massart*); 3 ♀, Ngowa, 16.xi.1938 (*R. P. J. Mertens*); 1 ♀, Wenga Ifomi (*E. Quineaux*); 1 ♀, Kisangani (*J. Muller*) (IRSNB, Brussels); 1 ♂, Kasongo, R. Lumami, ii.1960 (*P. L. G. Benoit*); 1 ♂, Kasongo, Mufala, xi.1959–i.1960 (*Benoit*); 1 ♂, Equateur, Bokuma, vii.1952 (*R. P. Lootens*); 1 ♀, Kivu, Kavumu to Kabunga, km 82, viii.1951 (*H. Bomans*); 1 ♀, Kivu, Lukando (Bunyakiri) 1959–1960 (*J. Hecq*) (MRAC, Tervuren). **Uganda:** 1 ♂, Entebbe, 16.xii.1912 (*C. C. Gowdey*); 1 ♀, Entebbe, 12.ix.1912 (*Gowdey*) (BMNH, London); 1 ♂, 1 ♀, Mulange, xi.1922 (*R. Summer*) (PPRI, Pretoria). **Kenya:** 1 ♀, Mabira F. (*A. F. J. Gedye*) (BMNH, London). **Angola:** 1 ♀, Carmona, Faz. Bambi, ii.1972 (*J. A. Quarteau*) (Duarte coll.).

Clavigralla hystricodes Stål comb. rev.

(Figs 43–49)

Clavigralla hystricodes Stål, 1866 : 109. LECTOTYPE ♀, SIERRA LEONE (NR, Stockholm), here designated [examined].

Acanthomia hystricodes (Stål) Stål, 1873 : 83.



Figs 43-49 *Clavigralla hystricodes*. (43) pronotum, dorsal view; (44) conjunctiva and vesica, left lateral view; (45) lateral margins of ♂ abdominal sternites III-VII, ventral view; (46) paramere, dorsal view, Sierra Leone; (47) same, Nigeria; (48) same, Tanzania; (49) sclerites of dorsal wall of gynatrium, dorsal view.

Length: ♂, 8.6-9.8 mm, mean 9.2 mm ($n = 21$); ♀, 9.2-10.8 mm, mean 9.8 mm ($n = 37$). Body robust, coloration generally piceous.

Antennifers strongly divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.76 : 0.80 : 0.75, in ♀ about 1.00 : 0.76 : 0.79 : 0.73, segments II and III straight. Length of segment I divided by width of head including eyes in male 1.25-1.49, mean 1.36 ($n = 23$), in female 1.18-1.46, mean 1.33 ($n = 37$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.83 : 0.62 : 0.90.

Pronotum (Fig. 43) strongly declivent, spines of disc short, broad, irregularly distributed. Width of pronotum across apices of posterolateral spines divided by width of head including eyes in male 2.63-3.07, mean 2.88 ($n = 15$), in female 2.63-3.25, mean 2.97 ($n = 31$). Scutellum strongly convex. Spines on femora as in *C. hystrix* except that anterior femur usually bears two subapical spines (usually one in *hystrix*). Posterior tibia weakly angled, rather than curved, near base, its length divided by that of posterior femur in both sexes 0.74-0.84, mean 0.80 ($n = 57$). Corium with apex produced, at rest reaching to level of suture between laterotergites V and VI.

Abdominal sternites III–VII with posterolateral angles strongly produced (Fig. 45). Male genital capsule with lip moderately broad, tongue rather narrow. Paramere (Figs 46–48) with apical margin weakly to rather strongly convex, making a variable angle with axis of shaft. Conjunctiva (Fig. 44) similar to that of *C. hystrix* but with distal dorsomedian lobe larger. Female sternite VII deeply cleft. Spermatheca with bulb narrow, duct short. Sclerites of wall of gynatrium (Fig. 49) slender, apically slightly convergent. Second valvula with apex broad, bearing apically a bifid process similar to that of *C. elongata* (cf. Fig. 57).

Sculpture and pubescence as in *C. hystrix* except that thoracic pleura lack spines and large granules.

Colour piceous, with pale brown or stramineous markings. Head with a diagonal pale line running from inner dorsal angle of each eye towards posterior margin of head behind ocellus. Antennal segments I, II and III each with a conspicuous pale stramineous annulus at base and another about two-thirds of the way towards apex, IV brown with basal annulus pale stramineous. Pronotum with granules along midline of declivent area black. Thoracic pleura reddish piceous, with black and pale rufous patches. Clavus and corium pale brown, corium with some spots near anterior margin and a large area near apical margin piceous to black, a line along posterior two-thirds of apical margin and some large spots on and near anterior margin stramineous. Membrane dark brown with extensive piceous area on disc and numerous obscure paler spots. Connexivum piceous, laterotergites III–VII each with a narrow, transverse band in anterior half stramineous. Most lateral one-quarter of abdominal sternites on each side dark, rufous brown with a stramineous spot on each margin adjacent to the pale band on the corresponding laterotergite, remaining area of each sternite stramineous with confused, rufous brown and piceous markings. Femora dark rufous brown with extensive area near base and some mottling near apex stramineous. Tibiae piceous, each with a distinct, stramineous annulus in basal and apical half.

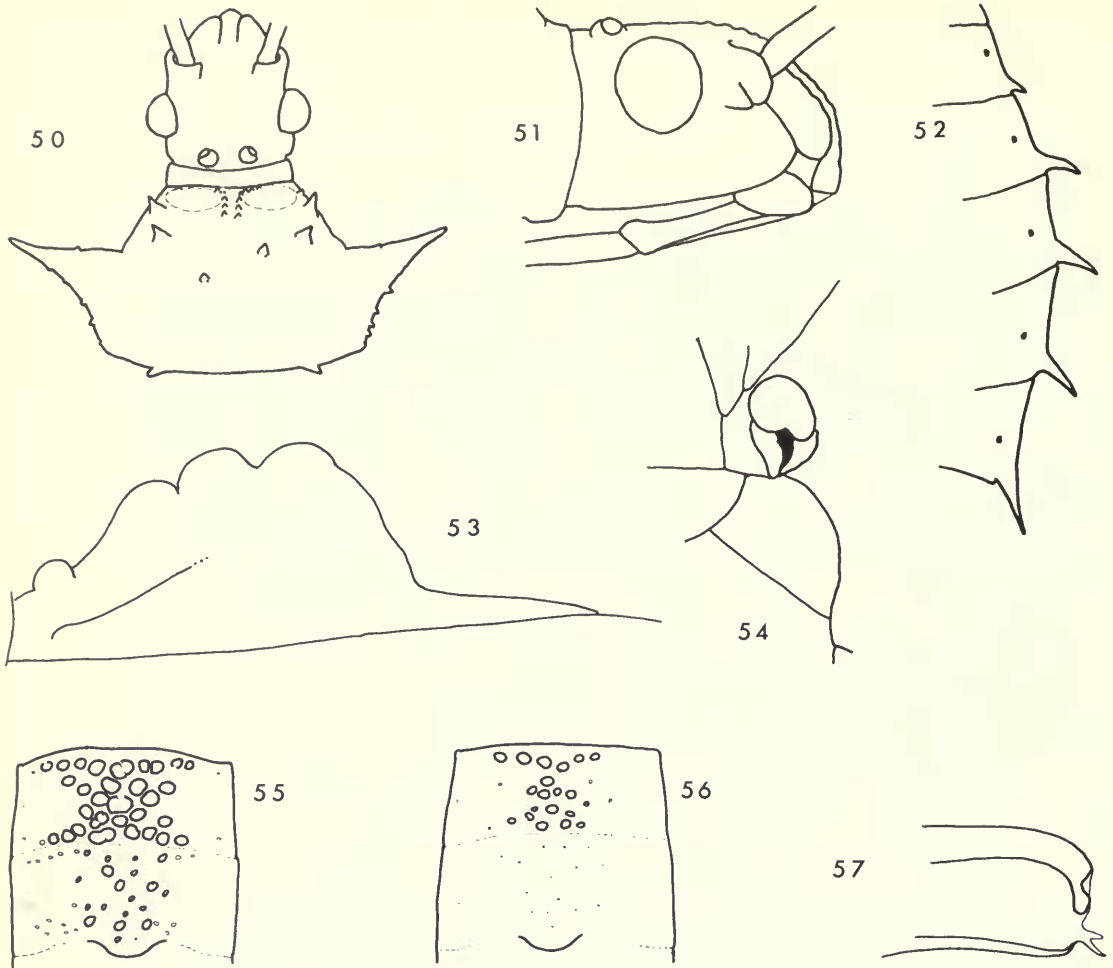
REMARKS. West African (Sierra Leone to Cameroun) individuals were found on average to have longer pronotal spines and a longer antennal segment I than the Central and East African individuals. The ratio width of pronotum/width of head in West African individuals was: male, 2.92–3.07, mean 3.00 ($n = 5$); female, 2.93–3.31, mean 3.02 ($n = 7$) and the ratio length of antennal segment I/head width was: male, 1.37–1.49, mean 1.44 ($n = 5$); female, 1.34–1.46, mean 1.40 ($n = 8$). The single female seen from South Africa was the largest at 10.75 mm in length (next longest specimen 10.4 mm) and had the lowest value, 1.18 for the ratio length of antennal segment I/head width (next lowest value 1.20 in individuals from Malawi and Zaire). In males from West and Central Africa the angle between the apical and lateral margins of the paramere is more narrowly rounded (Figs 46, 47) than in individuals from East Africa (Fig. 48). This does not of itself seem to justify taxonomic separation of the populations and no males were available from the most southerly part of the range or from Uganda, so that at present it is not possible to interpret the pattern of variation in full. Feeds on pulse crops in East Africa (Bohlen, 1973 : 95). A coloured figure of the adult is given by Bohlen (1973 : 33, fig. 159).

DISTRIBUTION. Tropical Africa, extending westward to Sierra Leone, eastward to Uganda and Tanzania and southward to the Transvaal.

MATERIAL EXAMINED

Clavigralla hystrioides Stål, lectotype ♀, Sierra Leone (no other data) (NR, Stockholm).

Sierra Leone: 1 ♂, Njala, 15.x.1960, on *Homalium angustifolium* Smith (Flacourtiaceae) (*M. P. Rushton*) (BMNH, London). **Ivory Coast:** 1 ♀, Daïa, Zepreghé, i.1963 (*J. Decelle*) (MRAC, Tervuren). **Ghana:** 3 ♂, Tafo, 14.iv.1966, 23.iv.1967, 13.ii.1967, the first two by pyrethrum knockdown from cocoa (*R. Kumar*); 1 ♀, Kade, cocoa farm, 22.viii.1969 (*G. Benson*) (UG, Legon). **Nigeria:** 2 ♂, 2 ♀, Calabar, 3–6.xi.1955 (*Bechyne, Exped. Mus. G. Frey, Nigeria-Kamerun*) (BMNH, London); 1 ♀, Ibadan, 22.iii.1949 (*B. Malkin*) (CAS, San Francisco). **Cameroun:** 2 ♀, Nyong-Sanaga, Nkolbisson, x.1963 (*L. G. Segers*) (MRAC, Tervuren). **Zaire:** 1 ♀, Lubumbashi, 11.ix.1931 (*Miss A. Mackie*) (BMNH, London); 46 ♂, 39 ♀, 1 ex without abdomen, Faradje, 3° 40' N, 29° 40' E, i.1913 (*Lang & Chapin*) (AMNH, New York); 2 ♂, Kasongo Terr., Lumani River, ii.1960 (*P. L. G. Benoit*); 1 ♂, Eala, 29.x.1938 (*G. Coueteaux*); 1 ♀, Equateur, Bokuma, vii.1952 (*R. P. Lootens*); 1 ♀, Sankuru, M'Pemba Zeo (Gandajika), 1960 (*R. Maréchal*) (MRAC, Tervuren); 2 ♂, Ngowa, 9.v.1939 (*R. P. J. Mertens*); 6 ♀, Ngowa, 7–27.iv.1939, 5–16.vi.1939 (*Mertens*); 2 ♂, 2 ♀, Mpese, ii–iv.1937, v–vi.1937 (*R. P. J. Cooreman*); 2 ♂, 1 ♀, Kibangula, ii.1955, 1956 (*L. Henry*); 1 ♂, Malongi, vi.1943 (*H. J. Brédo*); 1 ♀, Wenga Ifomi (*E. Quineaux*); 1 ♀, Kongolo (*Mad. Passau*); 1 ♀, Botuna, Bokungu, 1950 (*M. Boel*); 1 ♀, Libenge, 12.x.1947 (*R. Cremer, M. Neuman*) (IRSNB, Brussels). **Uganda:** 1 ♀, Entebbe, x.1912 (*C. C. Gowdey*) (BMNH, London). **Tanzania:** 1 ♀, Morogoro, 20.vi.1922, on legumes (*A. H. Ritchie*); 3 ♂, 1 ♀, Morogoro, 7–8.v.1973, on cow pea (*Vigna catjang* Endlicher); 1 ♂,



Figs 50-57 *Clavigralla elongata*. (50) head and pronotum, dorsal view; (51) head, right lateral view; (52) lateral margins of ♀ abdominal sternites III-VII, ventral view; (53) scutellum, left lateral view; (54) left metathoracic peritreme, lateral view; (55) abdominal tergites III and IV, ♀, South Africa; (56) same, ♀, Uganda; (57) left second valvula of ovipositor, lateral view.

Ilonga, 12.vi.1968, on grams (*Phaseolus*) (C.J. Thomas); 1 ♀, Ilonga, 26.ii.1968, on cow pea (Thomas); 1 ♀, Ilonga, 24.iv.1968, on cow pea (Thomas) (BMNH, London). Malawi: 2 ♀, vii-viii.1895 (A. Whyte) (BMNH, London). Rhodesia: 1 ♀, Cashel, xii.1947 (NM, Bulawayo). South Africa: 1 ♀, Transvaal, Marieps Mountain, iv.1932 (G. van Son) (TM, Pretoria).

Clavigralla elongata Signoret sp. rev.

(Figs 50-65)

[*Zicca horrida* (Germar) Herrich-Schaeffer, 1851 : 271, pl. 320, fig. 991. Misidentification.]

Clavigralla elongata Signoret, 1860 : 944. LECTOTYPE ♂, TANZANIA (NM, Vienna), here designated [examined]. [Synonymized with *Clavigralla horrida* (Germar) sensu Herrich-Schaeffer by Stål, 1866 : 108.]

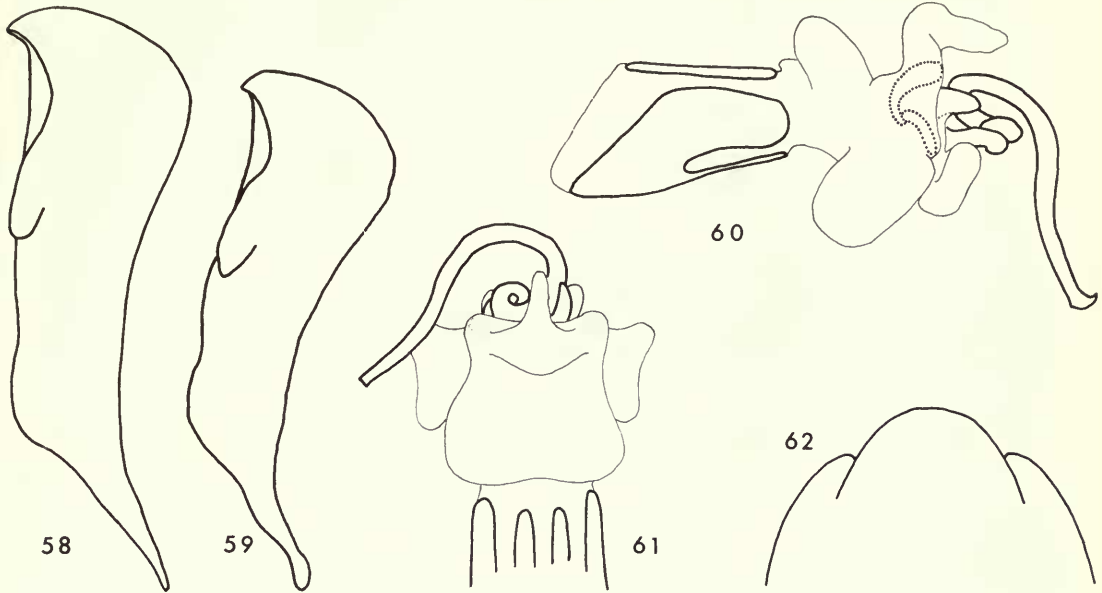
Clavigralla flavipennis Signoret, 1860 : 945. LECTOTYPE ♀, MADAGASCAR (NM, Vienna), here designated [examined]. [Synonymized with *Clavigralla horrida* (Germar) sensu Herrich-Schaeffer by Stål, 1866 : 108.]

[*Clavigralla horrida* (Germar) Stål, 1866 : 108. Misidentification.]

[*Acanthomia horrida* (Germar) Stål, 1873 : 83. Misidentification.]

Length: ♂, 8.3–9.6 mm, mean 9.1 mm (n = 23); ♀, 8.3–10.8 mm, mean 9.6 mm (n = 26). Form elongate-oblong, aspect spinose, coloration greyish yellow.

Head (Figs 50, 51) about as long as wide, antennifers moderately divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.85 : 0.82 : 0.81, in female about 1.00 : 0.85 : 0.0.82 : 0.80. Length of antennal segment I divided by width of head including eyes in male 1.29–1.72, mean 1.49 (n = 23), in female 1.18–1.59, mean 1.42 (n = 24). Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 0.90 : 0.58 : 0.89, in female about 1.00 : 0.87 : 0.58 : 0.88.

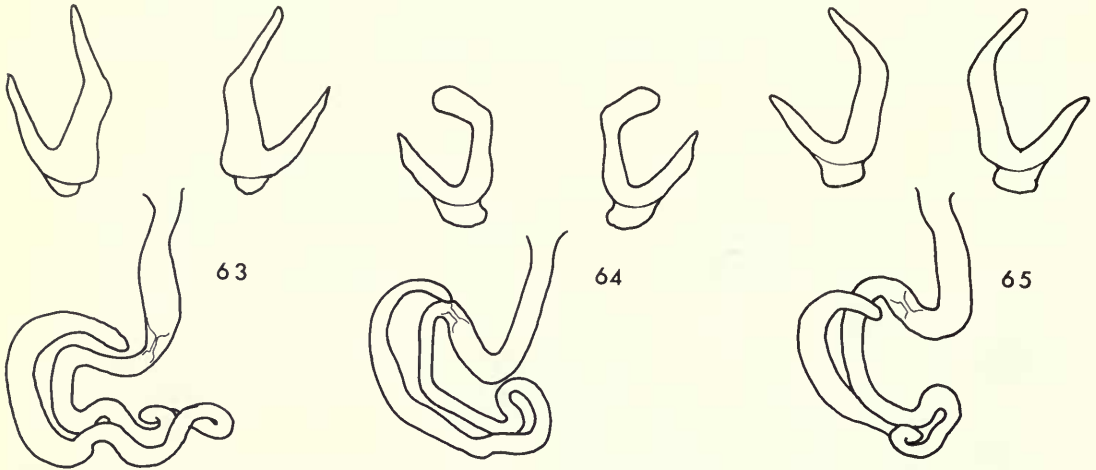


Figs 58–62 *Clavigralla elongata*. (58) left paramere, dorsal view, Tanzania; (59) same, Madagascar; (60) phallosome, expanded conjunctiva and vesica, left lateral view; (61) same, dorsal view; (62) lip of ♂ genital capsule, posteroventral view.

Pronotum (Fig. 50) strongly declivent, disc typically with an often irregular semicircle of about six large, spine-like tubercles, the anterior pair, situated close to mid-point of lateral margins, being only slightly longer and stouter than the pair behind them. Posterolateral angles of pronotum strongly produced, slightly elevated and directed slightly anteriorly, each terminating in a slender, very gently curved spine. Width of pronotum across apices of posterolateral spines divided by width of head including eyes rather variable between populations, in male 2.56–3.27, mean 2.84 (n = 23), in female 2.57–3.27, mean 2.91 (n = 25). Scutellum (Fig. 53) strongly convex, without outstanding spines or tubercles. Dorsal ridge of metathoracic peritreme (Fig. 54) entire, reniform. Corium with apex narrowly produced, at rest reaching posteriorly to about level of apex of laterotergite VI. Anterior and intermediate femora each with a single, moderate sized, subapical spine ventrally, posterior femur typically with two major spines with four minor spines between them and an apical series of four spines, rarely with additional major spines proximal to the main pair, number of small spines between main pair rather variable. Posterior tibia almost straight, its length divided by that of posterior femur in both sexes 0.76–0.88, mean 0.83 (n = 49).

Abdominal sternites III–VII (Fig. 52) each with a slender spine at posterolateral angles directed obliquely posteriad. Male genital capsule with lip (Fig. 62) narrowly rounded, tongue acutely pointed, entire. Paramere (Figs 58, 59) with blade rather broad, apex with a small tooth, basal tooth pointing back along shaft. Conjunctiva (Figs 60, 61) without ventral or distal dorsolateral lobes, dorsomedian lobe large, distal dorsomedian lobe small with narrow, distally projecting, finger-like, apical process, ventral apical and distal ventrolateral lobes well developed. Vesica long, left sclerite protecting base of vesica slightly longer than right, apices of both sclerites simple. Wings and straps of ejaculatory reservoir complex long.

Female sternum VII cleft for about one-third of its median length. Spermatheca (Fig. 63) typically with bulb narrow, duct convoluted for a distance equal to about twice the length of bulb, then simply curved for a distance about equal to length of bulb, then wider and thinner walled for about the same distance before entering gynatrial sac. Sclerites of wall of gynatrium with apices of median arms abruptly diverging, usually slender (Fig. 63). Apex of second valvula (Fig. 57) bearing a bifid process.



Figs 63–65 *Clavigralla elongata*. (63) spermatheca and sclerites of dorsal wall of gynatrium, dorsal view, South Africa; (64) same, Canary Is.; (65) same, Cape Verde Is.

Head weakly granulate throughout, more strongly on frons. Antennae with segment I minutely and sparsely granulate, other segments almost smooth. Pronotum with posterior half of disc punctate, lateral margins and area around posterolateral angles granulate to tuberculate. Scutellum granulate. Thoracic pleura punctate and very sparsely granulate, thoracic sterna minutely roughened. Femora weakly and sparsely granulate, very obscurely punctate in apical half, tibiae minutely granulate. Clavus and much of corium strongly punctate, disc of corium more weakly punctate, apex impunctate. Abdominal sternites and laterotergites minutely rough, lacking macrosculpture. Abdominal tergites I and II transversely coarsely striate; III and IV with a few large pores, very few pores of intermediate size and some small or minute ones, the large pores restricted to the midline of tergite III and its anterior and posterior borders and sometimes also to midline of segment IV (Fig. 55), from which they are often entirely lacking (Fig. 56), if present on segment IV then distributed along its whole length and concentrated near anterior margin; puncturation of remaining abdominal tergites small or minute.

Head with short, decumbent, silvery pubescence and a few, suberect colourless or pale brown hairs, the latter restricted to dorsal surface, especially frons. All antennal segments with very short, decumbent, silvery much sparser pubescence, on segments II and III than on I and lacking on specialized sensory area of IV, and short, suberect, pale hairs. Pronotum with silvery, decumbent pubescence anteriorly and very sparse, decumbent, golden pubescence posteriorly, with moderately long, pale brown to colourless, erect pubescence throughout. Scutellum with short, decumbent, silvery, tomentose pubescence mixed with long, erect, pale brown pubescence which becomes paler towards lateral margins. Thoracic pleura with silvery, decumbent pubescence and longer, sparse, semierect colourless hairs; thoracic sterna with short, decumbent, silvery white hairs. Legs with short, pale brown, suberect hairs and short, silvery, decumbent hairs throughout, the latter type denser on femora which also bear a few long, erect hairs ventrally. Clavus and corium with short, semidecumbent, pale brown to colourless pubescence and sparse, scarcely visible, decumbent, silvery pubescence. Abdominal sterna with short, suberect to semidecumbent, colourless hairs and decumbent, silvery pubescence. Decumbent, silvery pubescence of thoracic pleura and outer thirds of abdominal sterna organized in some places into longitudinal or oblique streaks of denser, tomentose or slightly tufted hairs.

Head, thorax and femora slightly ferruginous brown, with ventral surface of head, thoracic sterna and apices of pronotal spines piceous. Antennae stramineous, segments I and IV darker. Tibiae stramineous, each with a narrow, basal annulus and sometimes a similar, apical annulus brown. Clavus, corium, tarsi

and a few spots on apical halves of femora stramineous with a slightly greyish tinge. Membrane of hemelytra colourless, narrowly pigmented brown along course of veins, pigment interrupted in places. Abdominal sternites ferruginous brown with middle, especially of more anterior ones, more or less broadly piceous and a slightly oblique line on each side about one-third of the way from lateral margin to midline stramineous; a stramineous spot also present on lateral margin of each. Laterotergites ferruginous brown, III–VII each with a large, stramineous spot adjacent to the similarly coloured spot on lateral margin of corresponding sternite. Abdominal tergites I and II piceous, III–VII orange, III and lateral areas of IV–VI more or less heavily infuscate to piceous, centre of VI and VII occasionally with piceous markings.

REMARKS. There is considerable variation in the degree of puncturation of the abdominal terga and in the number of spines on the pronotal disc but the general pattern of both punctures and spines is characteristic. There are isolated populations of this species in the Canary Islands and the Cape Verde Islands. Morphometric data for specimens from these areas are not included in the description above. On average, the antennae are shorter than in the mainland population. In two females seen from the Canary Islands the length of antennal segment I divided by the width of the head including eyes was 1.18 and 1.30. In two males from the Cape Verde Islands this ratio was 1.37 and 1.43 and in four females from the same area it ranged from 1.31 to 1.39, mean 1.36. In females from both island groups the convoluted part of the duct of the spermatheca is shorter than in the mainland population (Figs 64, 65; compare Fig. 63). In both females from the Canary Islands the sclerites of the dorsal wall of the gynatrium (Fig. 64) were unusually short and much thicker apically than in the mainland form (Fig. 63), but this was not true of specimens from the Cape Verde Islands (Fig. 65). Many specimens from the Cape Verde Islands bear three major subapical spines on the posterior femur. Such a specimen is figured by Lindberg (1958 : 33) who records the species from the following islands in the group: Santo Antão, São Vecente, São Nicolau, São Tiago, Fogo, Brava and Ilheus de Rombo. Because these populations differ somewhat from the mainland form recent introduction seems unlikely. The nearest localities to these islands where *C. elongata* is now found are São Tomé, Príncipe and Zaire. Perhaps the species was once present in the intervening area of West Africa and has now been displaced by *C. shadabi* which appears from the recorded host-plant data to occupy a similar niche. The form from the Canary Islands may have been isolated long enough to have acquired specific status, to judge from the differences in the sclerites of the wall of the gynatrium when compared with material from other parts of the range of *C. elongata*. Unfortunately, no male was available from the Canary Islands and the question of the status of this population must remain unresolved for the present.

This is the species known to East African agricultural entomologists as *Acanthomia horrida*. It is a pest of many cultivated Leguminosae, in particular *Dolichos lablab* Linnaeus, *Cajanus cajan* Linnaeus (Millspaugh), *Phaseolus* spp. and *Vigna* spp. Natural enemies include *Mormonomyia argentifrons* Walker, a tachinid fly parasitic on the adult (Materu, 1971 : 376) and guineafowl. A scelionid (Hymenoptera), *Hadronotus gnidus* Nixon, parasitized a low percentage of eggs in the laboratory (Materu, 1971 : 380). None of these appears likely to cause a significant degree of mortality in the field. Materu (1970; 1971) describes the damage caused by this species and gives an account of its biology in Tanzania. The same author (Materu, 1972) describes and figures egg, nymph and adult. Accounts of control measures are given by Burnett, Lee & Park (1966), Materu & Makusi (1972; 1973) and Swaine (1969). Bohlen (1973 : 33, fig. 157) gives a coloured figure of the adult.

DISTRIBUTION. Much of central, eastern and southern Africa (but not the extreme south), Madagascar, Seychelles, Réunion, Mauritius, Rodriguez, São Tomé, Príncipe, Canary Islands, Cape Verde Islands, Yemen; recorded by Chiaromonte (1934) from Somalia; absent from the mainland of West Africa.

MATERIAL EXAMINED

Clavigralla elongata Signoret, lectotype ♂, **Tanzania:** Zanzibar (NM, Vienna). *Clavigralla flavipennis* Signoret, lectotype ♀, **Madagascar** (NM, Vienna).

Numerous specimens from the following localities. **Canary Islands.** **Cape Verde Islands:** Sao Nicolau, Ribiera do Recanto. **Yemen:** Hodeida, Wadi Bohl. **Ethiopia:** Mt Chilalo. **Sao Tomé:** Vallée Ribiera Palma. **Principe.** **Zaire:** Kongo Central, Banana; Kongo Central, Mpese; Bandundu, Popokabaka; Bandundu, Ngowa (near Popokabaka); Kasai Orientale, Sankuru, Gandajika; Orientale, Faradje; Kivu, Lwiro; Kivu, Uvira; Kivu, Butembe; Kivu, Terr. Beni, M. Bau; Kivu, Plaine de la Ruzizi; Kivu, Kasongo; Lulaba River; Katanga, Kambove; Katanga, Lubumbashi; Katanga, Moliro. **Rwanda:** Rubona. **Burundi:** Bururi. **Uganda:** Mabira Forest; Jinja; Entebbe; Kampala; Koki Country, SW. Buddu; Mt Kokanjero, SW. of Elgon; Valley of Kafu River, Unyoro; Mpanga Forest, Toro; Maramas District, Ilala, 22 km E. of Mumias; near Masindi; S. Lake Albert; Yingo; Namanve; Bugoma; Masindi. **Kenya:** Mombasa, 19 km NW. of Mazera; Mombasa, 16 km inland, Changamwe; Mombasa; Kwale; Langata; Teita Hills; Teita Hills, Wundanyi; Rabai; Kaimosi; Lake Jipe; Nyeri; Tumutumu; Bwamba Valley; Naivasha; Diani Beach; Nairobi. **Tanzania:** Zanzibar; Mt Chala; Biharamulo; Ukiriguru; E. Rukwa; Rukwa Rift; Kafukola; Dar-es-Salaam; Bukoba. **Angola:** 19 km SW. of Luimbale; 6 km SW. of Quirimbo. **Zambia:** Lake Bangweolo, Chishi Island; Upper Luangwa River; between Ft Jamieson and Lundazi; Lake Bangweulu, Mbawala. **Malawi:** Nkata Bay; Zomba; between Ft Maguire and Ft Johnston, SE. shore of Lake Nyasa; Mlanje Plateau; Mlanje. **Mozambique:** Ruo Valley; valley of Kola River, near E. Mt Chiperone; Serra da Gorongosa; Lower Zambesi River, Lumbo. **Rhodesia:** Umтали; Mashonaland. **South Africa:** Transvaal, Elandshoek; Tvl, Louis Trichard; Tvl, Karino; Natal, Malvern; Natal, Pinetown; Natal, Durban; Natal, Verulam; Natal, Tugela River, near Weenen; Natal, Umbilo; Natal, Isipingo; Natal, Kloof; Natal, Port Shepstone; Natal, Umkomaas River; Natal, Port Natal; Natal, Pondoland, Port St Johns; Natal, 32 km S. of Durban, Illova River Mouth; Natal, Umtentweni; Natal, Eshowe, Natal, Umkomaas; Natal, Umhlali; locality uncertain, 'C. Bon. Spei'. **Seychelles:** Praslin; Mahé, Silhouette. **Madagascar:** Lac Alaotra; Centre Ferme de Nanisana; Baie d'Antongil; Fénériver, Soaniérana; Diego-Suarez; Rég. Sud, Bekily; Amparafaravola (E. of Lake Alaotra); Rég. Sud, Andrahomana; Antanambé; South-east, Plaines d'Ambolisatra. **Réunion:** Bretagne. **Mauritius:** Vacoas. **Rodriguez.**

Altitudes, recorded on labels: 150–2000 m, mostly in the range 1000–1700 m, one locality at 2600 m in Ethiopia.

Host-plants recorded on labels: 'Canadian Wonder' beans (*Vicia faba* Linnaeus), cowpea (*Vigna* sp.) and '*C. procera*' in Tanzania, Soja (*Glycine*) in Madagascar and *Cajanus indicus* Sprenger in Réunion.

Other habitat and biological information on labels: in forest (twice); beside lake; among lake shore vegetation; 'cocotiers morts, rid. forêt'; ex crop of guinea fowl (twice).

Depositories of material: IRSNB, Brussels; NM, Bulawayo; Duarte coll.; BMNH, London; AMNH, New York; UM, Oxford; MNHN, Paris; PPRI, Pretoria; TM, Pretoria; CAS, San Francisco; MRAC, Tervuren; Slater coll.

Clavigralla shadabi sp. n.

(Figs 66–71)

Length: ♂, 7.9–9.8 mm, mean 8.9 mm (n = 18); ♀, 8.5–10.5 mm, mean 9.7 mm (n = 27). Very similar in overall appearance to *C. elongata*.

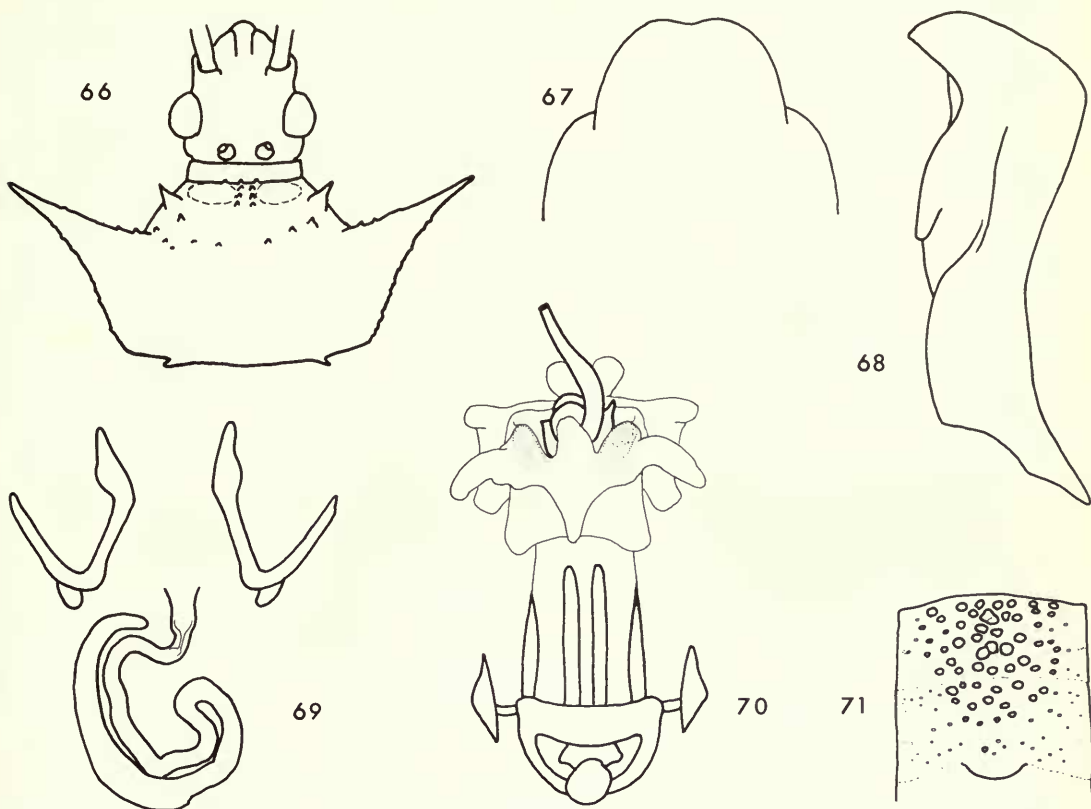
Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.81 : 0.81 : 0.77, in female about 1.00 : 0.81 : 0.80 : 0.74. Length of antennal segment I divided by width of head including eyes in male 1.49–1.67, mean 1.57 (n = 18), in female 1.39–1.62, mean 1.50 (n = 26). Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 0.92 : 0.62 : 0.96, in female about 1.00 : 0.90 : 0.60 : 0.94.

Pronotum (Fig. 66) with posterolateral angles in general more strongly produced, slightly more anteriorly directed and narrower than in *C. elongata*; disc with a semicircle of spines distributed as in *elongata* but the anterior pair much more prominent than the rest; width across apices of posterolateral spines divided by width of head including eyes in male 2.73–3.52, mean 3.03 (n = 18), in female 2.67–3.59, mean 3.03 (n = 25). Posterior tibia almost straight, its length divided by length of posterior femur 0.71–0.92, mean 0.81 (n = 43).

Male genital capsule with lip (Fig. 67) broad, paramere (Fig. 68) with prominent ridge on dorsomedial face. Conjunctiva (Fig. 70) differs from that of *elongata* and its close allies in that well-developed, membranous distal dorsolateral lobes are present and apex of distal dorsomedian lobe is narrow and directed anteriorly. Vesica rather short, sclerites protecting its base both with outer apical angle at least right-angled and usually, in either or both, acutely projecting laterad. Sclerites of dorsal wall of gynatrium

(Fig. 69) slender, with a subterminal expansion on median arm of each. Duct of spermatheca (Fig. 69) with convoluted portion short, broad, thin-walled section communicating with gynatrium very short.

Abdominal terga III and IV with a patch of punctures common to both, size of punctures greatest in middle of segment III, decreasing fairly uniformly in all directions away from this area (Fig. 71). Scutellum frequently with pale, silvery white hairs organized into a distinct, narrow, longitudinal median line; pronotum with obscure traces of three longitudinal lines of similar pubescence. Sculpture, pubescence and coloration otherwise very similar to those of *C. elongata*.



Figs 66-71 *Clavigralla shadabi*. (66) head and pronotum, dorsal view; (67) lip of ♂ genital capsule, posteroventral view; (68) paramere, dorsal view; (69) spermatheca and sclerites of dorsal wall of gynatrium, dorsal view; (70) aedeagus, dorsal view; (71) abdominal tergites III and IV.

REMARKS. This is the insect known to West African entomologists as *Acanthomia horrida*. Under this name it was recorded as a pest of cowpea (*Vigna*) by Booker (1965), Taylor & Omoniyi (1972) and Aina (1972). The last-named author recorded an unnamed ectoparasitic mite and *Rhinocoris bicolor* (Fabricius), a predaceous reduviid bug, as natural enemies. The range of this species overlaps with that of *C. elongata* in a large area of Zaire. The two species may be readily distinguished by comparison of the sizes of the spines on the disc of the pronotum. The length and thickness of the prominent posterolateral angles of the pronotum vary markedly between series from different localities. For example, these spine-like processes are much longer and thinner in specimens from Nero Mer, Ivory Coast and Bambesa, Zaire than they are in specimens from Lamto, Ivory Coast and Faradje, Zaire. There is marked variation between individuals in the shape of the apices of the sclerites protecting the base of the vesica and also in the length of the posterior tibia. None of these variations appears to be linked with any other, nor do they vary systematically with large-scale geographical range.

DISTRIBUTION. West and Central Africa, extending north-eastwards to S. Sudan. Not recorded to the east of the Great Rift Valley or south of latitude 12° S.

MATERIAL EXAMINED

Holotype ♂, **Nigeria**: Samaru, ix.1961, on cowpea (*Vigna catjang* Endlicher) (*Dept of Agric, N. Nigeria*) (BMNH, London).

Paratypes. **Sudan**: 1 ♀, Blue Nile, Abu Hashim to Galegu, 23–24.xi.1962 (*R. Linnavuori*) (BMNH, London). **Sierra Leone** [?]: 1 ♀, 'Sierra. Haw. W.' (UM, Oxford). **Ivory Coast**: 2 ♂, 8 ♀, Toumodi, Lamto, 30.iii, 3.vii, 4.xii.1962, 2.i, 4.vi, 11.vi.1963, 21.vii.1964 (*D. Gillon*); 4 ♂, 4 ♀, Nero-mer, 30.x.1963 (*Gillon*) (BMNH, London). **Ghana**: 1 ♂, Tafo, 27.xi.1962 on *Asclepias* (*B. Gerard*) (BMNH, London). **Togo**: 1 ♂, 2 ♀, Yoh, 12.vi.1963 (*Mme Y. Schach*) (MRAC, Tervuren). **Nigeria**: 1 ♂, 4 ♀, Bida, weeds on fallow land, 22–23.ix.1955 (*M. G. Emsley*); 1 ♂, no exact locality, on leaf of *Phaseolus aureus*, 22.viii.1953 (*Emsley*); 1 ♀, Ibadan, on cowpea (*Vigna*), 17.vi.1962 (*T. A. Taylor*); 1 ♂, Shendam, at light, 26.ix.1955 (*Emsley*); 1 ♂, 1 ♀, Akpashe District, Udi, 28.x.1955 (*Bechyne*) (BMNH, London). **Cameroun**: 1 ♀, Batouri District, savannah country, 1.i–24.ii.1936 (*F. G. Merfield*) (BMNH, London). **Zaire**: 72 ♂, 90 ♀, Orientale, Faradje, 29° 40' E, 3° 40' N, i.1913 (*Lang & Chapin*) (AMNH, New York); 5 ♂, 6 ♀, Orientale, Bambesa, 1937–1938 (*J. Vrydagh*); 1 ♂, Kivu, Kasongo, ix.1959 (*P. L. G. Benoit*); 1 ♀, Katanga, Kiambi, Manono, Riv. Luvua, x.1956 (*N. Leleup*) (MRAC, Tervuren); 1 ♂, Katanga, Nyunzu, 1955 (*L. Henry*); 1 ♂, 2 ♀, Kivu, Kibangula, ii.1955, 1956 (*Henry*); 2 ♂, 2 ♀, Katanga, Lubumbashi, i.1939, 9.iii.1939 (*H. Brédo*); 1 ♀, Kongo Central, Mpese, v–vi.1937 (*R. P. J. Cooreman*); 16 ♂, 10 ♀, Orientale, Bambesa, 11–12.vi, 13.xi.1937, 18–21.xii.1939, 6–8.i.1940 (*J. Vrydagh*); 7 ♂, 17 ♀, Bandundu, Ngowa (near Popokabaka), 16–17.ii.1938, 16.xi.1938, 17.vi.1939, 2.vii.1939 (*R. P. J. Mertens*) (IRSNB, Brussels).

Material excluded from type-series. **Ghana**: 1 ♀, Mt Atewa, 15.xii.1967 (*D. Leston*); 1 ♀, Oyoko, 24.xi.1966 (*Leston*); 2 ♀, Legon, 2.x.1968 (*R. Kumar*); 1 ♀, Tafo, 20.iv.1966, by pyrethrum knockdown from cocoa; 1 ♂, 3 ♀, Tafo, 13.v.1966, 14.v.1966, 3.i.1967 (*Kumar*) (UG, Legon). **Nigeria**: 3 ♂, 6 ♀, Zaria, Samaru, all on cowpea (*Vigna*), ix.1961, 31.viii.1966, 14.ix.1966 (*J. C. Deeming*) (IAR, Samaru). (Received after description was prepared.)

Clavigralla breviceps sp. n.

(Figs 72–76)

Length: ♂, 7.5–8.3 mm, mean 7.8 mm (n = 4); ♀, 7.8–8.3 mm, mean 8.1 mm (n = 5). Closely resembles *C. elongata* in body form but smaller.

Head short, broad, eyes prominent (Fig. 72). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.83 : 0.82 : 0.77, in female about 1.00 : 0.81 : 0.81 : 0.77. Length of antennal segment I divided by width of head including eyes in male 1.16–1.24, mean 1.21 (n = 4), in female 1.11–1.20, mean 1.15 (n = 5). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.88 : 0.49 : 0.82.

Pronotum (Fig. 72) with a pair of stout, blunt spines near anterolateral margins of disc with a few, blunt spines behind them. Width of pronotum across apices of posterolateral spines divided by width of head including eyes in male 2.67–2.91, mean 2.80 (n = 4), in female 2.74–2.95, mean 2.82 (n = 4). Length of posterior tibia divided by length of posterior femur 0.71–0.80, mean 0.75 (n = 9).

Male genital capsule with lip (Fig. 75) broad, paramere (Fig. 73) broader at apex in proportion to length compared to that of *C. elongata*. Conjunctiva as in *elongata*. Sclerites of dorsal wall of gynatrium (Fig. 74) slender, duct of spermatheca (Fig. 74) very short.

Abdominal tergites III and IV (Fig. 76) with numerous, large and medium sized punctures over most of their width. Tibiae with brown annuli at base, apex and middle, tarsi brown except for most of dorsal surface of first segment. Sculpture, pubescence and coloration otherwise similar to that of *elongata*.

REMARKS. The smallest of the species closely allied to *C. elongata* and readily distinguished from its relatives by the short head and the colour of the tibiae and tarsi.

DISTRIBUTION. West Africa and Zaire, not common.

MATERIAL EXAMINED

Holotype ♂, **Nigeria**: near Zaria, Samaru, at grass roots, 12.ix.1954 (*M. G. Emsley*) (BMNH, London).

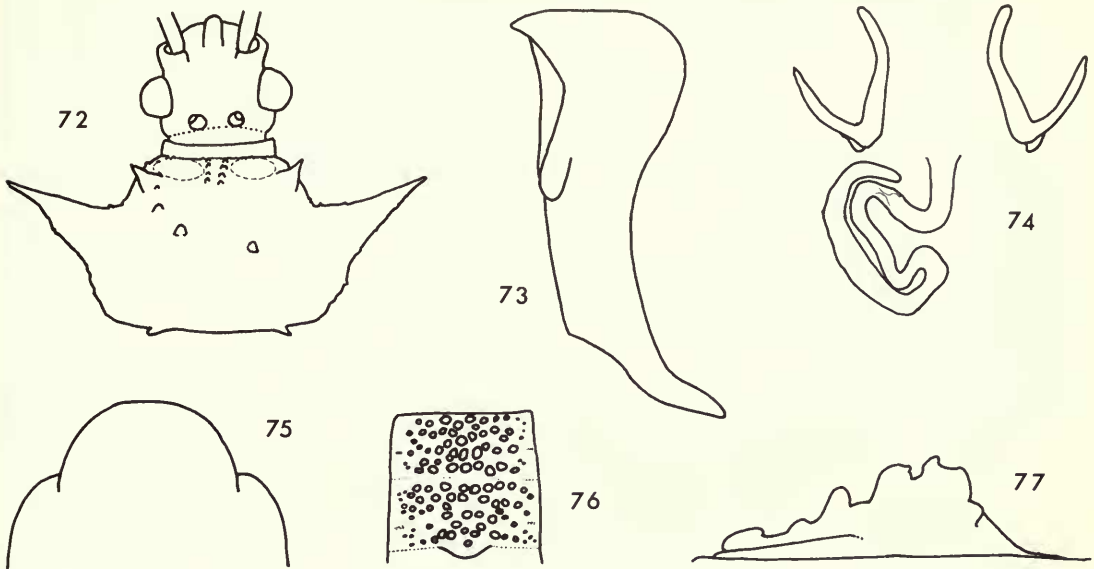
Paratypes. **Nigeria**: 1 ♂, Samaru, in mercury vapour light-trap, 1–8.viii.1970 (*P. H. Ward*); 1 ♀, swept from grasses and flowers, 30–31.vii.1970 (*Ward*) (BMNH, London). **Zaire**: 2 ♂, 4 ♀, 1 ex. without abdomen, Orientale, Faradje, 3° 40' N, 29° 40' E, i.1913 (*Lang & Chapin*) (AMNH, New York and BMNH, London).

Clavigralla ankatsoensis sp. n.

(Fig. 77)

Length: ♀, 9.9 mm (n = 2). ♂ unknown. Very similar to *C. elongata* in almost all respects.

Ratio of lengths of antennal segments I : II : III : IV in holotype 1.00 : 0.85 : 0.81 : 0.91; length of segment I divided by width of head including eyes in holotype 1.31. Antennae completely lacking in paratype. Ratio of lengths of rostral segments I : II : III : IV about 1.00 : 0.90 : 0.55 : 0.91. Width of pronotum across apices of posterolateral spines divided by width of head including eyes in paratype 2.81. Apices of both posterolateral spines lacking in holotype. Scutellum (Fig. 77) much less strongly convex than in *C. elongata* and with more prominent tubercles. Posterolateral angles of abdominal sternites III–VII produced into spines which stand almost perpendicular to lateral margin of abdomen (as in *C. madagascariensis* and *C. asterix*, Figs 79, 80). Length of posterior tibia divided by that of posterior femur about 0.78. Pubescence of scutellum distinctly less dense than in *C. elongata*.



Figs 72–77 *Clavigralla* species. (72) *breviceps*, ♂ head and pronotum, dorsal view; (73) same, paramere, dorsal view; (74) same, spermatheca and sclerites of dorsal wall of gynatrium, dorsal view; (75) same, lip of ♂ genital capsule, posteroventral view; (76) same, ♀ abdominal tergites III and IV; (77) *ankatsoensis*, scutellum, left lateral view.

REMARKS. Distinguished from *C. madagascariensis* and *C. asterix* by the presence on the scutellum of sparse, erect pubescence and larger tubercles, but resembles them in the form of the posterolateral spines of the abdominal sternites.

DISTRIBUTION. Known only from the type-locality in Madagascar.

MATERIAL EXAMINED

Holotype ♀, Madagascar: Ankatso, ii.1921 (*R. Decary*) (MNHN, Paris).

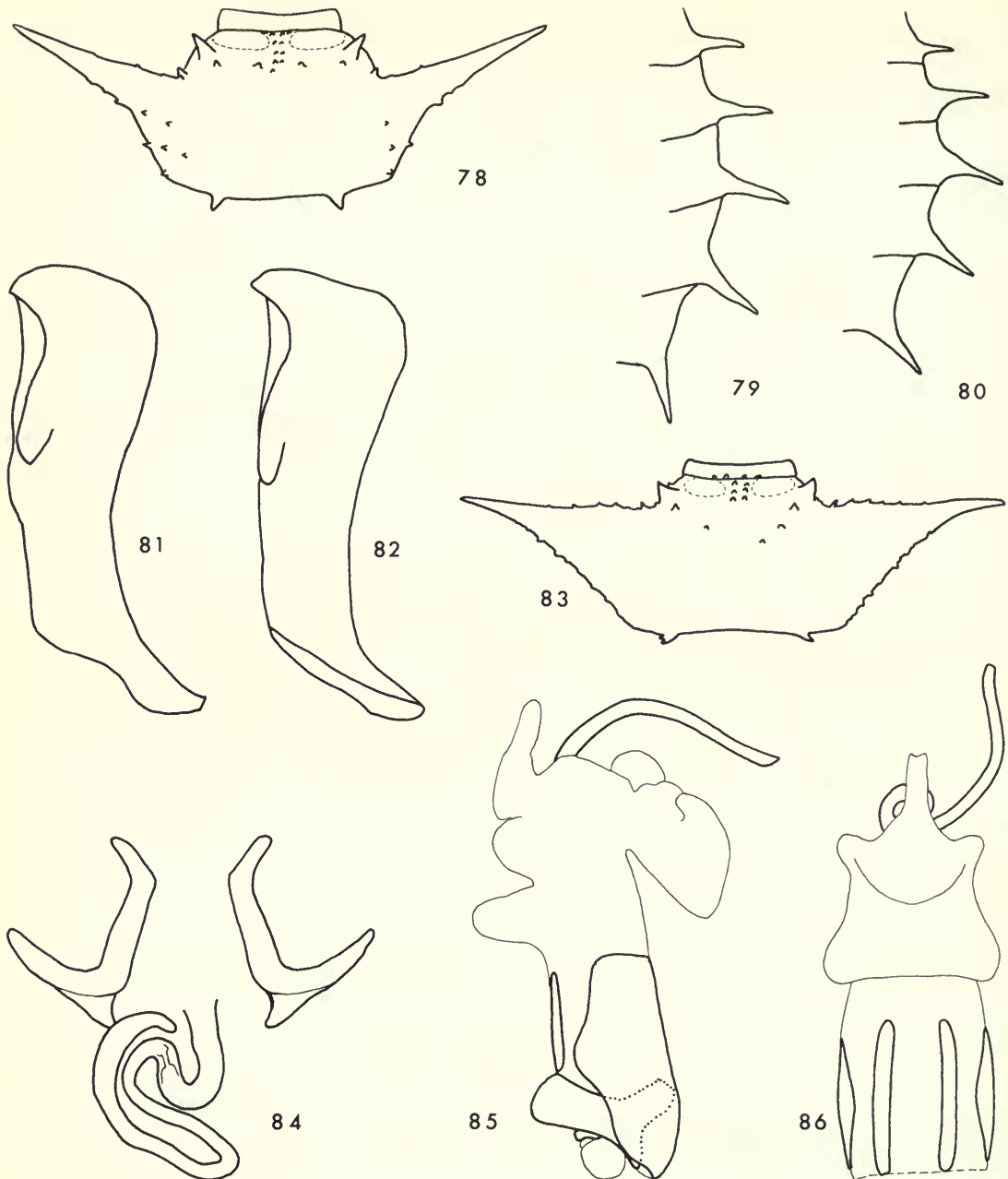
Paratype. Madagascar: 1 ♀, same data as holotype (MNHN, Paris).

Clavigralla madagascariensis sp. n.

(Figs 78, 79, 81, 84)

Length: ♂, 8.0–9.0 mm, mean 8.5 mm (n = 5); ♀, 8.7–9.6 mm, mean 9.2 mm (n = 4). Similar to *C. elongata* in overall appearance but differs in the longer spines at sides of thorax and abdomen, which are more nearly perpendicular to body margin.

Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.81 : 0.74 : 0.77, in female about 1.00 : 0.83 : 0.75 : 0.78. Length of antennal segment I divided by width of head including eyes in



Figs 78-86 *Clavigralla* species. (78) *madagascariensis*, ♀ pronotum, dorsal view; (79) same, lateral margins of ♀ abdominal sternites III-VII, ventral view; (80) *asterix*, holotype ♂, lateral margins of abdominal sternites III-VII; (81) *madagascariensis*, paramere, dorsal view; (82) *asterix*, paramere, dorsal view; (83) same, holotype ♂, pronotum, dorsal view; (84) *madagascariensis*, spermatheca and sclerites of dorsal wall of gynatrium, dorsal view; (85) *asterix*, aedeagus, left lateral view; (86) same, dorsal view, basal apparatus omitted.

male 1.56–1.66, mean 1.61 ($n = 5$), in female 1.42–1.64, mean 1.54 ($n = 4$). Ratio of lengths of rostral segments I : II : III : IV about 1.00 : 0.88 : 0.46 : 0.77.

Pronotum (Fig. 78) with posterolateral angles drawn out into long, slender, anterolaterally directed spines; width across apices of spines divided by width of head including eyes in male 3.36–3.90, mean 3.58 ($n = 4$), in female 3.00–3.67, mean 3.40 ($n = 4$). Scutellum convex, but less so than in *C. elongata*, depressed in midline. Corium with apex at rest reaching level of middle of laterotergite VI. Posterior tibia almost straight, its length divided by length of posterior femur about 0.83.

Abdominal sterna III–VII with posterolateral angles drawn out into long spines (Fig. 79), the spines almost perpendicular to abdominal margin and rather slender. Paramere (Fig. 81) and conjunctiva very similar to those of *C. elongata*. Ovipositor as in *elongata*; sclerites of wall of gynatrium (Fig. 84) slender, sharply angled outwards apically; spermatheca (Fig. 84) with bulb narrow, duct short and not convoluted.

Sculpture, pubescence and colour generally as in *C. elongata* except that pubescence of pronotum and scutellum is much shorter, scutellum completely lacking erect or suberect pubescence and only a few hairs of this type present on pronotum.

REMARKS. Differs from *elongata* in the average longer pronotal posterolateral spines, in the arrangement of spines on pronotal disc, which resembles that of *shadabi*, in the form of the sclerites of the gynatrial wall and the form of the spermatheca and in the spines at the posterolateral angles of the abdominal sternites, which are almost perpendicular in this species and deflected posteriorly in *elongata*. Clearly forms a group with *ankatsoensis* and *asterix* but differs from the former in the absence of erect pubescence on the scutellum and from the latter in the form of the pronotum. In a long series of *elongata* from Baie d'Antongil in the MNHN, Paris are three females which appear to be intermediate between *madagascariensis* and *elongata*. In all three the pronotal posterolateral angles are very strongly produced and in two of them the spines at the posterolateral angles of the abdominal sternites stand out almost perpendicular to the sides of the body. In all three the scutellum is as strongly convex as in *elongata* but has only a few outstanding hairs in addition to the dense, decumbent pubescence. One female was dissected and proved to have the spermathecal duct and the sclerites of the wall of the gynatrium intermediate in form between the two species. This mixture of characters suggests that there may be some genetic interchange between the two species.

DISTRIBUTION. Madagascar.

MATERIAL EXAMINED

Holotype ♂, Madagascar: Antalaha, xii.1935 (*Vadon*) (MNHN, Paris).

Paratypes. Madagascar: 1 ♂, 1 ♀, Tananarive, 1898 (*Noualhier*) (MNHN, Paris); 4 ♂, 2 ♀, Fampnambo, iii.1959, x.1959, 1962 (*J. Vadon*) (MRAC, Tervuren and BMNH, London).

Clavigralla asterix sp. n.

(Figs 80, 82, 83, 85, 86)

Length: ♂, 8.0–8.2 mm ($n = 2$); ♀, 8.7 mm ($n = 1$). Closely related to *C. elongata*, *ankatsoensis* and *madagascariensis*, which it resembles in most features.

Ratio of lengths of antennal segments I : II : III : IV in males 1.00 : 0.80 : – and 1.00 : 0.86 : – : –, in female 1.00 : 0.82 : 0.78 : – (– denotes missing segment). Length of segment I divided by width of head including eyes in males 1.26 and 1.35, in female 1.36. Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 1.00 : 0.56 : 0.93.

Pronotum (Fig. 83) with posterolateral angles produced into long, very broadly based, laterally directed spines; width across apices of spines divided by width of head including eyes 3.79 in holotype male, apices of spines missing in paratypes. Arrangement of semicircle of spines on disc of pronotum as in *shadabi* and *madagascariensis*. Scutellum less strongly convex than that of *C. elongata*. Corium with apex at rest reaching to level of basal half of laterotergite VI. Posterior tibia very weakly curved at base, its length divided by that of posterior femur about 0.79.

Abdominal sternites III–VII with posterolateral angles produced into long, broadly based spines perpendicular to abdominal margin (Fig. 80). Paramere (Fig. 82) and conjunctiva (Figs 85, 86) differing little from those of *C. elongata*. Sclerites of wall of gynatrium slender, long, resembling those of *madagascariensis*. Spermatheca with bulb longer and more slender than that of *madagascariensis*, with a slender, distal tail, duct not convoluted and about one and one-third times as long as bulb. Sculpture, colour and

pubescence as in *elongata*, except that pubescence of scutellum and pronotum resembles that of *madagascariensis* in that scutellum lacks outstanding hairs and pronotum has only a few, short, erect hairs arising from granules at margins.

REMARKS. Resembles *madagascariensis* in most of the features in which it differs from *elongata*; readily distinguished from all its relatives by the form of the posterolateral pronotal angles.

DISTRIBUTION. Known only from the type-locality in Madagascar.

MATERIAL EXAMINED

Holotype ♂, Madagascar: Ambohimombo, 1894 (*Forsyth-Major*) (BMNH, London).

Paratypes. Madagascar: 1 ♂, 1 ♀, Ambohimombo Forest, 24.i.1895 (*Forsyth-Major*) (BMNH, London).

Clavigralla schnelli (Villiers) comb. n.

(Figs 87–96)

Myla schnelli Villiers, 1950 : 656–658, fig. 16. Holotype ♂, GUINEA (MNHN, Paris) [not examined].

[*Myla gracilis* Schouteden; Linnavuori, 1971 : 175. Misidentification.]

Lancha schnelli (Villiers); Shadab, 1972 : 1–11.

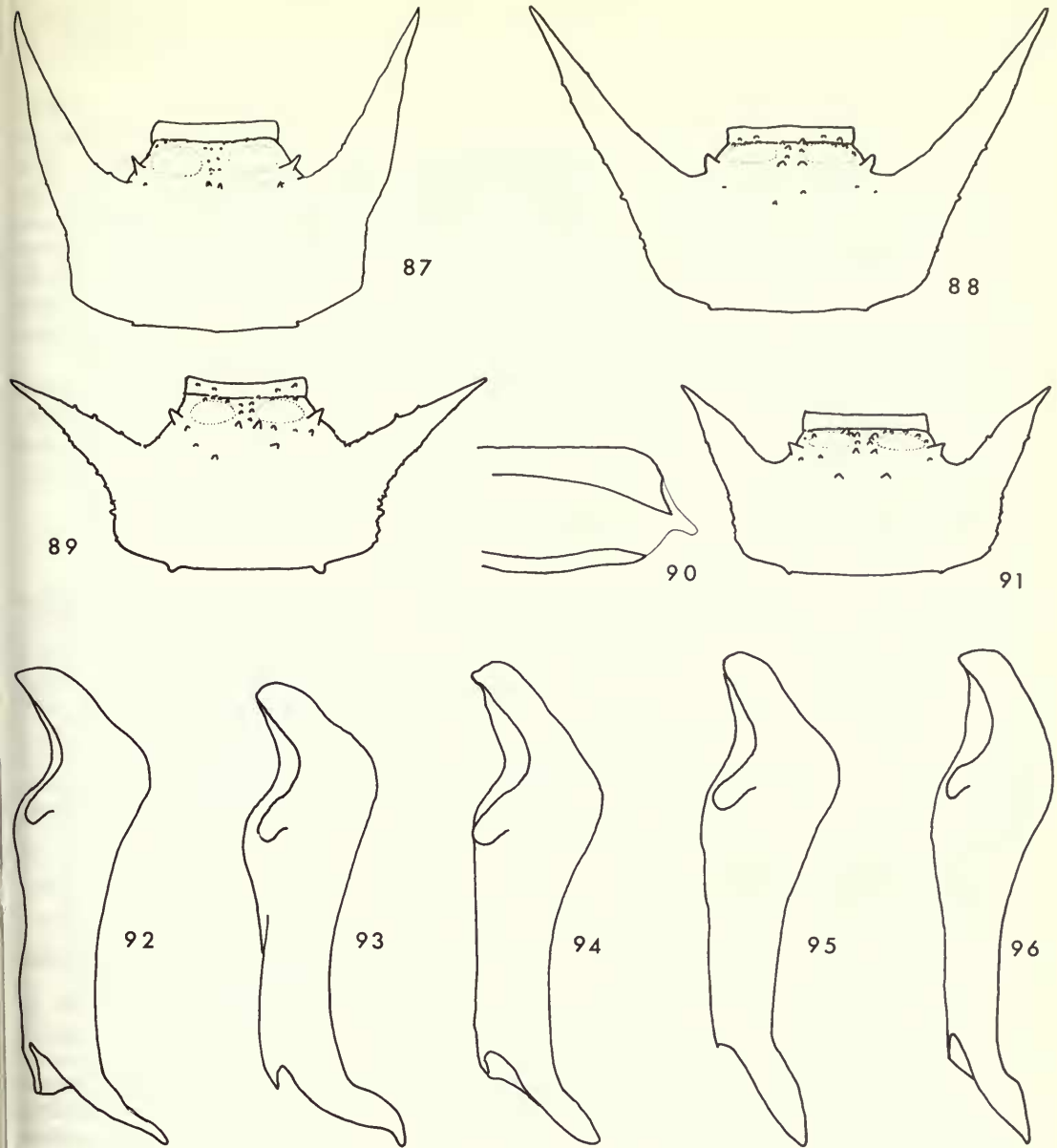
Length: ♂, 8.8–11.2 mm, mean 10.1 mm (n = 24); ♀, 9.3–12.0 mm, mean 11.1 mm (n = 21). Resembles *C. elongata* in general appearance.

Antennifers slightly divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.75 : 0.77 : 0.76, in female about 1.00 : 0.74 : 0.75 : 0.71. Length of segment I divided by width of head including eyes in male 1.68–2.14, mean 1.96 (n = 22), in female 1.79–2.12, mean 1.98 (n = 20). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.87 : 0.67 : 0.99.

Pronotum (Figs 87–89, 91) moderately declivent anteriorly, prescutellar spines small, disc with a few, small, spine-like tubercles and a pair of larger spines close to mid-point of anterolateral margins, posterolateral angles drawn out into long, tapering spines which are very variable in shape and are directed more or less obliquely forward. Length of posterolateral spine, measured from extreme posterolateral angle of pronotum to apex of spine, divided by width of head including eyes in male 1.29–2.09, mean 1.82 (n = 21), in female 1.78–2.23, mean 1.97 (n = 19); distance between apices of spines divided by width of head including eyes in male 2.71–3.94, mean 3.23 (n = 21) in female 2.77–3.83, mean 3.20 (n = 19); length of spines not closely correlated with distance between their apices due to extreme variability of angle at which they project from pronotum. In most examples seen apices of posterolateral spines fall anterior to level of anterior margin of pronotum, but in some examples with short, widely spreading spines the apices do not project anteriorly beyond anterior margin of calli. Scutellum slightly longer than wide, flat or with disc very slightly convex, coarsely granulate-punctate; its most prominent feature the two basal, raised knobs. Corium with apex narrowly produced, its apex at rest reaching posteriorly to level of basal one-quarter of laterotergite VI. Metathoracic wing with antevannal vein well defined (not shown by Shadab, 1972 : fig. 8). Anterior and intermediate femora without subapical spines, posterior femur with two long, subapical spines beneath, about 6 very small spines between them and an apical series of 3–4 spines; posterior tibia straight, its length divided by length of posterior femur 0.76–0.88, mean 0.82 (n = 39).

Abdominal sternites III–VII with posterolateral angles produced into very slender, posteriorly directed spines (Shadab, 1972 : fig. 1; Villiers, 1950 : fig. 16). Male genital capsule with posterior lip entire, moderately broad, tongue narrowly pointed. Paramere (Figs 92–96) with apical margin strongly oblique, apex rarely more prolonged (Fig. 94), external angle of blade rarely more broadly rounded (Fig. 96) than usual. Conjunctiva entirely membranous, ventrally with distal ventrolateral and apical ventral lobes normally developed, dorsally with distal dorsolateral lobes absent, distal dorsomedian lobe obsolete, intermediate dorsal lobe very large, high, conical, slightly bifid laterally at apex, dorsomedian lobe transverse, each of its dorsal angles with a vertical, finger-like lobe about as high as main part of dorsomedian lobe. Female with abdominal sternite VII cleft for one-third of its length. Second valvula with a single, entire process at apex (Fig. 90). Spermatheca (Shadab, 1972 : fig. 18) with bulb very narrow, duct slightly undulating but not convoluted. Sclerites of wall of gynatrium V-shaped; median, longitudinal arms gently convergent apically, about one and one-third times as long as anterior, transverse arms.

Head obsoletely granulate-punctate. Pronotum fairly strongly, thoracic pleura and scutellum less strongly granulate-punctate. Basal halves of anterior veins of corium granulate, clavus and corium punctate. Antennal segments I–III and femora minutely and sparsely granulate. Thoracic and abdominal sterna rastrate.



Figs 87-96 *Clavigralla schnelli*. (87) pronotum of ♀, Zaire, Faradje; (88) pronotum of ♂, Ivory Coast, Lamto; (89) pronotum of ♂, Zaire, Mpese; (90) apex of second valvula of ovipositor, left lateral view; (91) pronotum of ♂, Zaire, Macaco, Luebo, dorsal view; (92) left paramere, dorsal view, Ivory Coast; (93) same, Zaire, Macaco, Luebo; (94) same, Luebo; (95) same, Zaire, Mpese; (96) same, Zaire, Ngowa.

Head, pronotum, scutellum, clavus, corium, thoracic pleura, abdominal sterna, legs and antennae with short, semierect pubescence. Decumbent, white pubescence present on head, all exposed parts of thorax and abdomen and on clavus, corium and femora, this pubescence forming dense, white, narrow bands along midline of pronotum and scutellum and along anterolateral margins of pronotum, four narrow, longitudinal bands on vertex and a broad, transverse band on disc of pronotum.

General coloration of exposed parts of head, thorax and abdomen and of clavus and corium pale ferruginous-brown, becoming darker and redder towards apices of posterolateral pronotal angles; spines

at apices of pronotal posterolateral angles and spines at abdominal margin piceous. Abdomen sometimes with 2-5 paler, continuous, longitudinal bands beneath. Rostrum concolorous with body, antennae and legs stramineous, sometimes with apical part of posterior femur ferruginous-brown.

REMARKS. A distinctive species, figured in dorsal view by Villiers (1950 : fig. 16) and Shadab (1972 : fig. 1). The form of the pronotum and to a lesser extent of the parameres are variable and are often characteristic for a particular locality though they do not vary systematically on a large geographical scale. The extreme forms of the paramere shown in Figs 94 and 96 are from individuals which appear to have suffered some damage during growth. There is no evidence from the genitalia to justify the division of this taxon into more than one species despite the great variability of the pronotum. Specimens with less well-developed pronotal posterolateral angles might be confused with *C. shadabi* but may be distinguished from that species by the narrower body and from it and all species of the *elongata*-group by the flat or just perceptibly convex scutellum.

There is a specimen of this species in MRAC, Tervuren labelled as 'Holotype' of *Myla gracilis* Schouteden. It was not designated by Schouteden (1938 : 293) in his original description of *M. gracilis* and, although it is evidently part of his (mixed) type-series, it disagrees with the detailed description of *gracilis* in respect of the antennifers, rostrum, antennae, femora and genital capsule.

DISTRIBUTION. West and Central Africa.

MATERIAL EXAMINED

Guinea: 1 ♂, Mt Nimba, Kéoulenta, 11.vi.1942 (*M. Lamotte*) (MNHN, Paris) (paratype of *Myla schnelli* Villiers). **Ivory Coast:** 10 ♂, 10 ♀, Toumodi, Lamto, 11.ix, 6.xi, 4.xii.1962, 2.i, 26.ii, 13.iii, 23.iv, 7.v, 14.v.1963, 13.vii, 24.vii.1964 (BMNH, London). **Zaire:** 6 ♂, 10 ♀, Faradje, 3° 40' N, 29° 40' E, i.1913 (*Lang & Chapin*); 1 ♂, Faradje, i.1912 (*Lang & Chapin*); 1 ♂, 1 ♀, Medje, 2° 25' N, 27° 15' E, 10.iv.1910 (*Lang & Chapin*) (AMNH, New York); 2 ♂, Mpese, v-vi.1937 (*R. P. J. Cooreman*); 1 ♂, Ngowa, 16.xi.1938 (*R. P. J. Mertens*); 1 ♀, Ngowa, 1938 (*J. Mertens*) (IRSNB, Brussels); 1 ♂, Luebo, on *Urena lobata* Linnaeus (Malvaceae) viii.1921 (*Lt Ghesquière*) (labelled 'holotype'); 1 ♂, Macaco (Luebo), 30.ix.1921 (*Dr H. Schouteden*) (labelled 'paratype'); 1 ♀, Kikwit, xi.1920 (*P. Vanderijst*) (MRAC, Tervuren) (the last three specimens are syntypes of *Myla gracilis* Schouteden); 1 ♂, 110 km S. of Sampwe, 980 m, 21.i.1958 (*E. S. Ross, R. E. Leech*) (CAS, San Francisco).

Clavigralla mira sp. n.

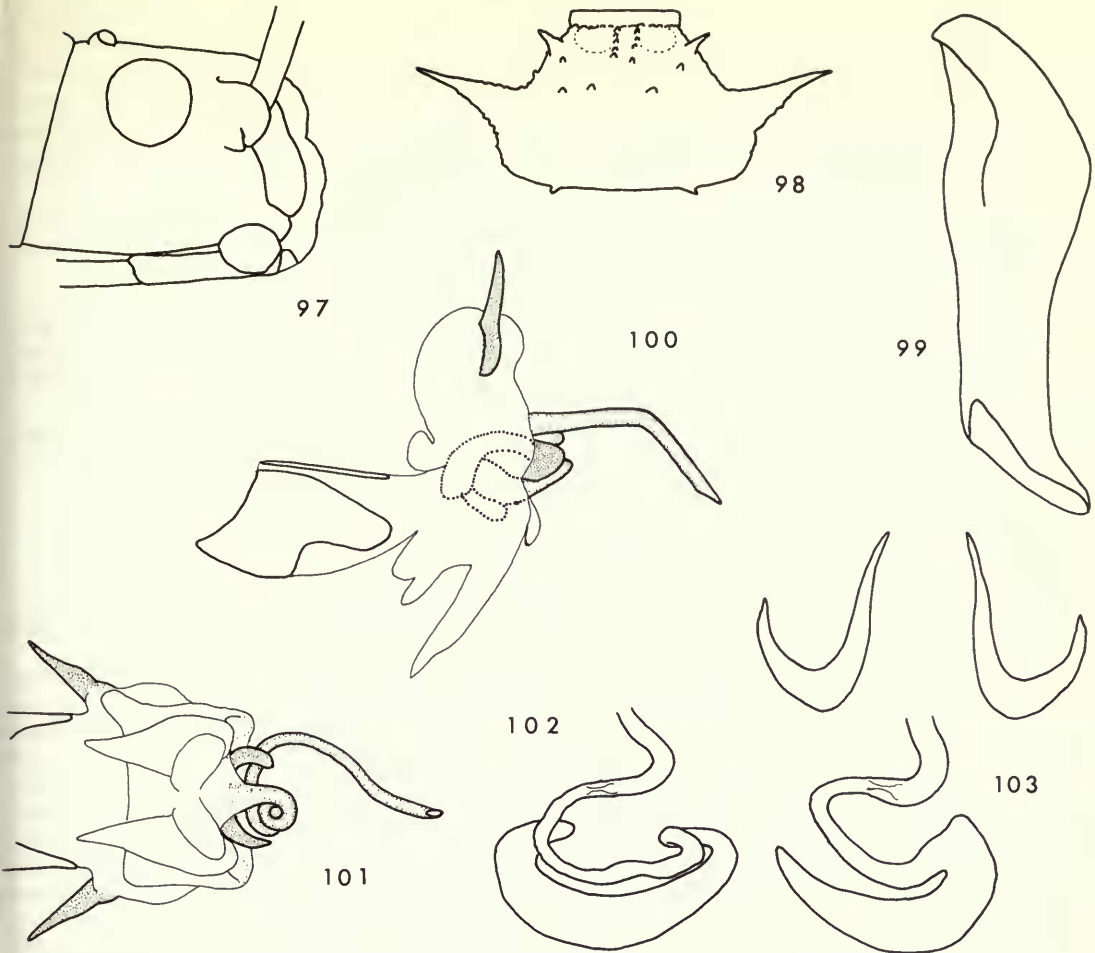
(Figs 97-103)

Length: ♂, 7.5-8.7 mm, mean 7.1 mm ($n = 12$); ♀, 8.0-8.8 mm, mean 8.3 mm ($n = 11$). Rather similar in build and appearance to *C. elongata*.

Antennifers slightly to moderately divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.89 : 0.89 : 0.81, in female about 1.00 : 0.87 : 0.87 : 0.74. Length of antennal segment I divided by width of head including eyes in male 1.26-1.56, mean 1.38 ($n = 13$), in female 1.23-1.38, mean 1.32 ($n = 11$). Rostrum short, at rest with apex of segment I reaching posteriorly to level of centre of eye and apex of segment IV reaching posterior margin of mesosternum. Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.89 : 0.68 : 0.89. Frons strongly elevated between antennifers (Fig. 97), not evenly declivent.

Pronotum (Fig. 98) more shallowly declivent than in *C. elongata*, collar broad, posterolateral angles more nearly perpendicular to sides of body and more slenderly produced; disc of pronotum with a pair of slender spines near middle of anterolateral margins and several much shorter spines behind them; width across apices of posterolateral spines divided by width of head including eyes in male 2.29-2.73, mean 2.54 ($n = 10$), in female 2.27-2.69, mean 2.48 ($n = 11$). Scutellum convex, but less so than in *C. elongata*. Corium with apical margin almost straight, apex scarcely produced and reaching only to base or middle of laterotergite VI. Anterior and intermediate femora each with or without a small, subapical spine beneath, posterior femur with two major subapical spines, 0-2 very small spines between them and an apical series of 3-4 spines. Posterior tibia straight, its length divided by that of posterior femur in both sexes 0.78-0.86, mean 0.82 ($n = 19$).

Abdominal sternites III-VII with posterolateral angles more strongly produced than in *C. elongata*, directed posterodorsally. Male genital capsule with lip broad, tongue entire. Paramere (Fig. 99) with apical margin oblique. Conjunctiva (Figs 100, 101) with dorsomedian lobe low, confluent with distal dorso-



Figs 97–103 *Clavigralla mira*. (97) head, ♂, right lateral view; (98) pronotum, ♂, dorsal view; (99) paramere, dorsal view; (100) phallosome, conjunctiva and vesica, left lateral view; (101) conjunctiva and vesica, ventral view; (102) spermatheca, Zaire, Kapanga; (103) spermatheca and sclerites of dorsal wall of gynatrium, dorsal view, Ivory Coast.

median lobe and only visible as a small lobe at each side of it; distal dorsomedian lobe voluminous, with a pair of slender, gently curved, sclerotized processes apically; distal dorsolateral lobes absent; apical ventral lobes present, membranous; distal ventrolateral lobes divided, one part of each forming a long, narrow lobe, the other part fused with its fellow on the opposite side to form a low ridge across ventral surface of conjunctiva; left end of this ridge produced into a short, membranous extension. Female with apex of second valvula bearing a more or less acutely pointed, bifurcate process similar to that of *C. elongata*. Spermatheca (Fig. 103) with duct short, gently curved or longer and slightly convoluted. Sclerites of wall of gynatrium as in Fig. 103; gynatrial sac large.

Colour generally dark brown; tibiae, except basal and apical annuli, and first segment of tarsi stramineous; spines of pronotum and abdominal margin black. Pubescence distributed as in *C. elongata*, with the shorter hairs of body, femora and hemelytra white, making whole insect appear grey; midline of pronotum and scutellum marked by a conspicuous line of adpressed, white hairs; two additional, similar lines of pubescence sometimes present, at least anteriorly, on pronotum parallel to midline; dorsum of head, thoracic pleura and lateral areas of abdominal sterna with faint, oblique lines of adpressed, white hairs. Veins of hemelytral membrane dark brown, uninterrupted.

REMARKS. Although closely related to *C. elongata* and its allies by reason of the bifurcate apical appendage of the second valvula, this species is unique in the genus in having sclerotized append-

ages to the distal dorsomedian lobe of the conjunctiva. The asymmetry of the ventral, membranous lobes of the conjunctiva is also remarkable. The spermathecae of two females from Thysville and Kapanga (Zaire) had longer bulbs and ducts than those of examples from Lamto (Ivory Coast) and Ngowa (Zaire) (compare Figs 102, 103). These specimens are excluded from the type-series and the above description is based only on the typical females. No difference was found between the genitalia of males from Lamto and from Nasisi Hills (Tanzania). Males from Zaire and females from Tanzania were unavailable, but see *C. annectans*, below.

DISTRIBUTION. Tropical Africa from Ivory Coast to Tanzania.

MATERIAL EXAMINED

Holotype ♂, **Ivory Coast:** Lamto (Toumodi), 28.v.1964 (*D. Gillon*) (BMNH, London).

Paratypes. **Ivory Coast:** 12 ♂, 10 ♀, Lamto, 3.vii, 4.xii, 18.xii.1962, 15.i, 26.ii.1963, 21.i, 28.i, 1.iv, 28.v, 13.vii, 16.vii, 21.vii, 28.viii.1964 (*D. Gillon*) (BMNH, London). **Zaire:** 1 ♀, Bandundu, Ngowa, xii.1937 (*R. P. J. Mertens*) (IRSNB, Brussels). **Tanzania:** 1 ♂, Nasisi Hills, 20 miles (32 km) N. of Mumias, 4800 ft (1460 m), 14–15.vi.1911 (*S. A. Neave*) (BMNH, London).

Material excluded from type-series. **Zaire:** 1 ♀, Kongo Central, Thysville, 1959–1963 (*R. Michaux*); 1 ♀, Kasai Orientale, Kapanga, xi.1933 (*G. F. Overlaet*) (MRAC, Tervuren).

Clavigralla annectans sp. n.

(Figs 243–246)

Length: ♂, 8.2 mm (n = 1). Known only from the holotype. Indistinguishable in external appearance from *C. mira*, which it resembles in form, sculpture, pubescence and coloration, and especially in the bulging frons (Fig. 243).

Length of antennal segment I divided by width of head including eyes 1.50; ratio of lengths of antennal segments I : II : III : IV as 1.00 : 0.83 : 0.79 : 0.69. Length of rostral segment I divided by width of head including eyes 0.59, ratio of lengths of rostral segments I : II : III : IV as 1.00 : 0.90 : 0.66 : 0.90. Width of pronotum across apices of posterolateral spines divided by width of head including eyes 2.35. Length of posterior femur divided by length of posterior tibia 0.81. Paramere (Fig. 244) with first tooth of blade well developed (obsolete in *mira*). Conjunctiva (Figs 245, 246) with dorsomedian lobe well developed, extending medially in an erect, narrowly conical lobe and laterally in similar sized, posteriorly directed lobes; distal dorsomedian lobe very small and narrow, distal dorsolateral lobes obsolete, intermediate dorsal lobe absent; no sclerotized appendages present on any dorsal lobe; ventral apical lobes of normal size and shape for the genus, their surfaces minutely warty; distal ventrolateral lobes normally developed, lightly sclerotized; no other lobes present; all of conjunctiva symmetrical. Ejaculatory reservoir complex with wings and straps long.

REMARKS. Differs from *C. mira*, to which it is obviously closely related, in the more strongly toothed paramere and particularly in the symmetrical conjunctiva lacking dorsal sclerotized appendages. The form of the conjunctiva is typical of the genus but the inflated frons is a character shared only with *C. mira*. Thus *C. annectans* forms a link between that bizarre species and the normal members of the *elongata*-group. A single specimen of this species was received in a consignment of material sent after the descriptions of the *elongata*-group were prepared. It is possible that the two females excluded from the type-series of *C. mira*, above, on the basis of their longer spermathecal ducts, may prove to belong to the present species if more material with associated males and females should become available. The localities of these two females, Lulua–Kapanga and Thysville, are at 8° 22' S, 22° 37' E and 5° 16' S, 14° 15' E respectively, while the type-locality of *annectans* is at 7° 11' S, 29° 09' E. A female of typical *mira* form is recorded above from Ngowa at 5° 41' S, 16° 41' E. These locality data suggest that *annectans* may be sympatric with *mira* in the middle part of the latter's range, in which case the profound differences in the genitalia between these two superficially indistinguishable species may be the result of strong selection for an isolating mechanism in the recent history of the species pair.

DISTRIBUTION. Zaire.

MATERIAL EXAMINED

Holotype ♂, **Zaire:** 10 miles (16 km) S. of Kapona, 13.i.1958 (*E. S. Ross, R. E. Leech*) (CAS, San Francisco).

Clavigralla insignis (Distant) comb. n.

(Figs 104–107, 109)

Acanthomia insignis Distant, 1908 : 442. Holotype ♀, UGANDA (BMNH, London) [examined].

Length: ♂, 8·7–9·2 mm (n = 2); ♀, 9·1–9·2 mm (n = 2). Similar to *C. elongata* but more brightly coloured and more strikingly patterned and with apical margin of corium almost straight.

Ratio of lengths of antennal segments I : II : III : IV in both sexes about 1·00 : 0·83 : 0·79 : 0·81. Length of segment I divided by width of head including eyes in male 1·39–1·58 (n = 2), in female 1·36–1·47 (n = 2). Ratio of lengths of rostral segments I : II : III : IV about 1·00 : 0·88 : 0·70 : 0·94 in both sexes.

Pronotum (Fig. 104) with posterolateral spines directed almost perpendicularly to sides of body, width across apices of spines divided by width of head including eyes in male 2·72–2·81 (n = 2), in female 2·64–2·67 (n = 2). Disc of pronotum with a short, stout spine near middle of each anterolateral margin and a number of smaller, short, blunt spines behind them. Scutellum (Fig. 107) rather strongly convex and a little longer than broad. Corium with apical margin almost straight, apex reaching extreme base of laterotergite VI at rest. Posterior tibia straight, its length divided by that of posterior femur about 0·83.

Abdominal sternites III–VII with posterolateral angles drawn out into spines (Fig. 106) which are directed posteriorly as in *C. elongata*. Male genital capsule with lip broad, tongue acute; paramere (Fig. 109) with apical margin slightly concave. Aedeagus with sclerites protecting base of vesica longer than those of *C. elongata*; conjunctiva with all lobes membranous; paired apical ventral and distal ventrolateral lobes present, distal dorsolateral and ventral lobes absent, dorsomedian lobe low, flat-topped, distal dorsomedian lobe obsolete, intermediate dorsomedian lobe present, slightly larger than dorsomedian lobe. Female genitalia generally similar to those of *C. elongata* but spermatheca (Fig. 105) with bulb longer, narrow part of duct less convoluted and broad part of duct longer.

Sculpture and pilosity generally as in *C. elongata* but short, decumbent, white pubescence forming four more or less distinct longitudinal lines on dorsal surface of head, three very distinct longitudinal lines on pronotum and three to five distinct lines along scutellum; sides of head, thoracic pleura and sides of abdominal sterna each with two oblique lines of similar white pubescence. Scutellum much less densely pubescent than in *C. elongata*.

Head, thorax, abdomen, femora and antennal segment I dark red-brown; spines of pronotum and at sides of abdomen black; antennal segments II–VI yellow-brown with IV infusate; tibiae and tarsi stramineous, all tibiae with distinct basal annulus piceous to black, tarsi and apices of tibiae infusate. Clavus and corium bright orange-brown, clavus with median piceous stripe, corium with a narrow stripe along part of R and a broad, irregular stripe along parts of Cu, M and apical margin piceous; membrane milky white, veins boldly marked with chocolate brown.

REMARKS. The male specimen from Ethiopia has the posterolateral angles stouter and the pronotal spines and granules less pronounced than in the other specimens seen. The holotype is figured by Distant (1909 : pl. 2, fig. 7).

DISTRIBUTION. Highlands of East Africa.

MATERIAL EXAMINED

Acanthomia insignis Distant, holotype ♀, Uganda: Ruwenzori, 5600 ft (1700 m) (*G. F. Scott-Elliot*) (BMNH, London).

Ethiopia: 1 ♂, Borodda, 2500 m, 18–19.xi.1948 (*H. Scott*) (BMNH, London). **Zaire:** 1 ♂, 1 ♀, Kivu, Butembo, ix–x.1965 (*P. Célis*) (MRAC, Tervuren).

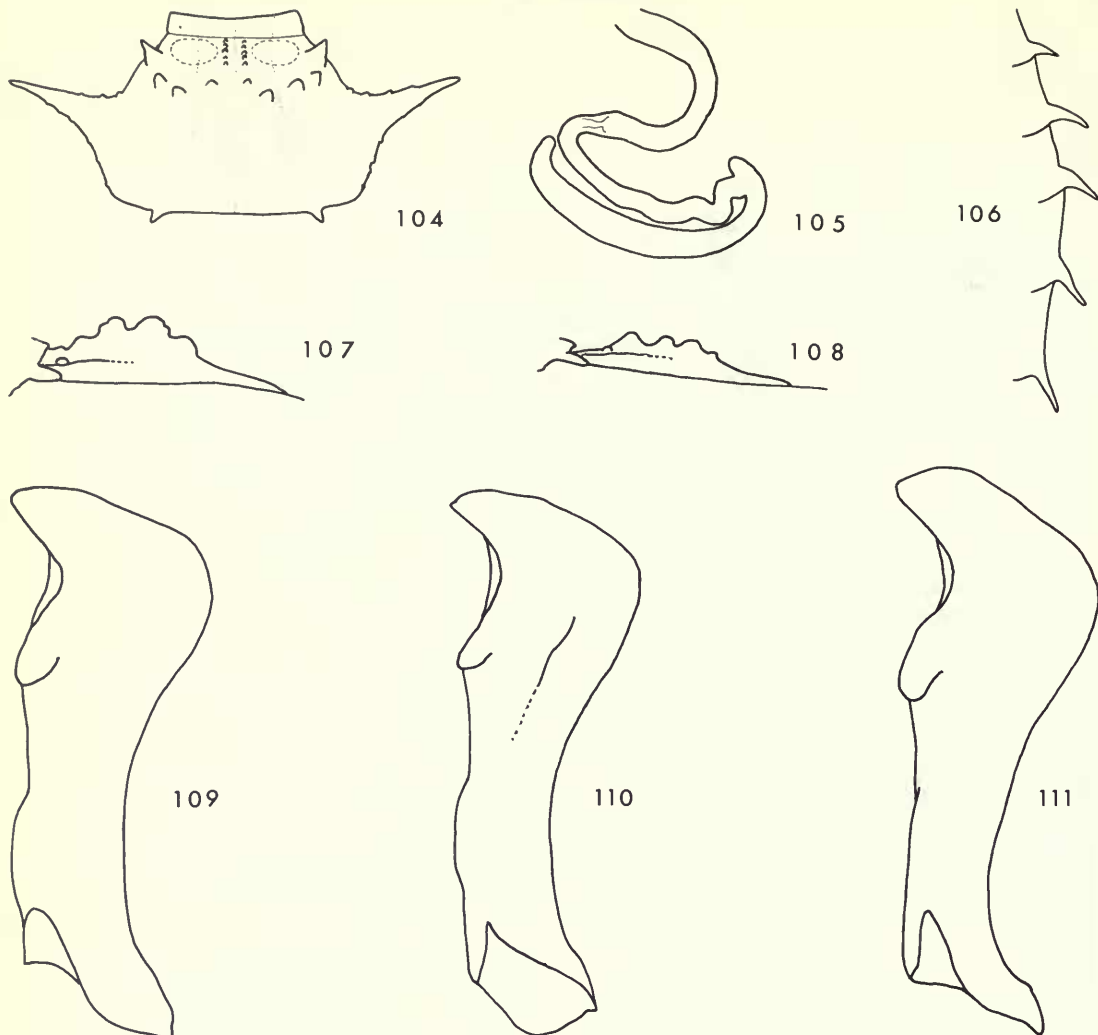
Clavigralla minor (Schouteden) comb. n., stat. n.

(Fig. 110)

Acanthomia insignis forma *minor* Schouteden, 1938 : 290. LECTOTYPE ♂, BURUNDI (MRAC, Tervuren), here designated [examined].

Length: ♂, 8·1 mm (n = 1); ♀, 8·6 mm (n = 1). Very similar to *C. insignis* but smaller.

Ratio of lengths of antennal segments I : II : III : IV in male as 1·00 : 0·85 : 0·85 : 0·89, in female as 1·00 : 0·83 : 0·87 : 0·87; length of segment I divided by width of head including eyes in male 1·39 (n = 1), in female 1·32 (n = 1). Ratio of lengths of rostral segments I : II : III : IV in male as 1·00 : 0·87 : 0·63 : 0·99, in female as 1·00 : 0·87 : 0·69 : 0·99.



Figs 104–111 *Clavigralla* species. (104) *insignis*, ♂, pronotum, dorsal view; (105) same, holotype ♀, spermatheca, dorsal view; (106) same, ♂, lateral margin of abdominal sternites III–VII, ventral view; (107) same, holotype ♀, scutellum, left lateral view; (108) *andersoni*, holotype ♂, scutellum, left lateral view; (109) *insignis*, left paramere, dorsal view; (110) *minor*, lectotype, left paramere, dorsal view; (111) *andersoni*, holotype, left paramere, dorsal view.

Width of pronotum across apices of posterolateral spines divided by width of head including eyes in female 2.59 (n = 1), male pronotum damaged.

Paramere of male (Fig. 110) with apical margin convex and shaft proportionately longer than in *C. insignis*.

Sculpture, pubescence and coloration as in *C. insignis*.

REMARKS. Because of the difference in the shape of the paramere this 'form' is treated as a full species, distinct from *C. insignis*.

DISTRIBUTION. Known only from the type-locality in Burundi.

MATERIAL EXAMINED

Acanthomia insignis minor Schouteden, lectotype ♂, Burundi: Kitega, xi.1935 (*P. Lefèvre*) (MRAC, Tervuren).

Burundi: 1 ♀, same data as lectotype (paralectotype of *Acanthomia insignis minor*) (MRAC, Tervuren).

Clavigralla andersoni sp. n.

(Figs 108, 111)

Length: ♂, 9.4 mm (n = 1). Very similar to *C. insignis*. Known only from the male holotype.

Ratio of lengths of antennal segments I : II : III : IV as 1.00 : 0.83 : - : - (segments III and IV missing); length of segment I divided by width of head including eyes 1.42. Ratio of lengths of rostral segments I : II : III : IV as 1.00 : 0.88 : 0.62 : 0.96.

Posterolateral angles of pronotum directed more anteriorly than in *C. insignis*; width across apices of posterolateral spines divided by width of head including eyes 2.58. Scutellum (Fig. 108) weakly convex. Length of posterior tibia divided by length of posterior femur 0.87.

Paramere of male (Fig. 111) with apical margin strongly oblique.

Dark markings of clavus, corium and membrane veins much less evident than in *C. insignis*.

REMARKS. Differs from *C. insignis* chiefly in the form of the scutellum and the paramere.

DISTRIBUTION. East Africa.

MATERIAL EXAMINED

Holotype ♂, 'British East Africa' (*T. J. Anderson*) (BMNH, London).

Clavigralla angolensis sp. n.

(Figs 112-114)

Length: ♂, 8.1 mm (n = 1). Similar to *C. elongata* and *C. insignis* but smaller and with posterolateral angles of abdominal sternites III-VII produced almost perpendicularly to sides of body. Known only from the male holotype.

Ratio of lengths of antennal segments I : II : III : IV as 1.00 : 0.80 : 0.78 : 0.89; length of segment I divided by width of head including eyes 1.42. Ratio of lengths of rostral segments I : II : III : IV as 1.00 : 0.87 : 0.69 : 1.04.

Pronotum (Fig. 112) strongly declivent, posterolateral angles strongly produced and directed slightly forwards; width across apices of posterolateral spines divided by width of head including eyes 2.95; disc with a slender spine near middle of each anterolateral margin and a few very short spines behind these. Scutellum strongly convex, biserially granulate longitudinally. Corium with apical margin almost straight, at rest with apex reaching to level of base of laterotergite VI. Length of posterior tibia divided by length of posterior femur 0.81.

Abdominal sternites III-VII with posterolateral angles produced laterad into rather slender spines standing almost at right angles to the line of the abdominal margin (Fig. 113). Male genital capsule with lip broad, tongue acute; paramere (Fig. 114) rather thick, apical margin short and oblique.

Pubescence and colour pattern as in *C. insignis* except that ground colour of head, thorax, abdomen, antennal segment I and femora is orange-brown, the same colour as clavus and corium; femora with a few, obscure, paler markings in apical third; tibiae with basal annuli orange-brown, not black.

REMARKS. Easily distinguished from the other species of the *C. elongata* and *C. insignis* groups by the combination of almost perpendicular abdominal marginal spines with the small size.

DISTRIBUTION. Known only from the type-locality in Angola.

MATERIAL EXAMINED

Holotype ♂, Angola: Capeio, 22.vii.1931 (*Mrs W. P. Cockerell*) (BMNH, London).

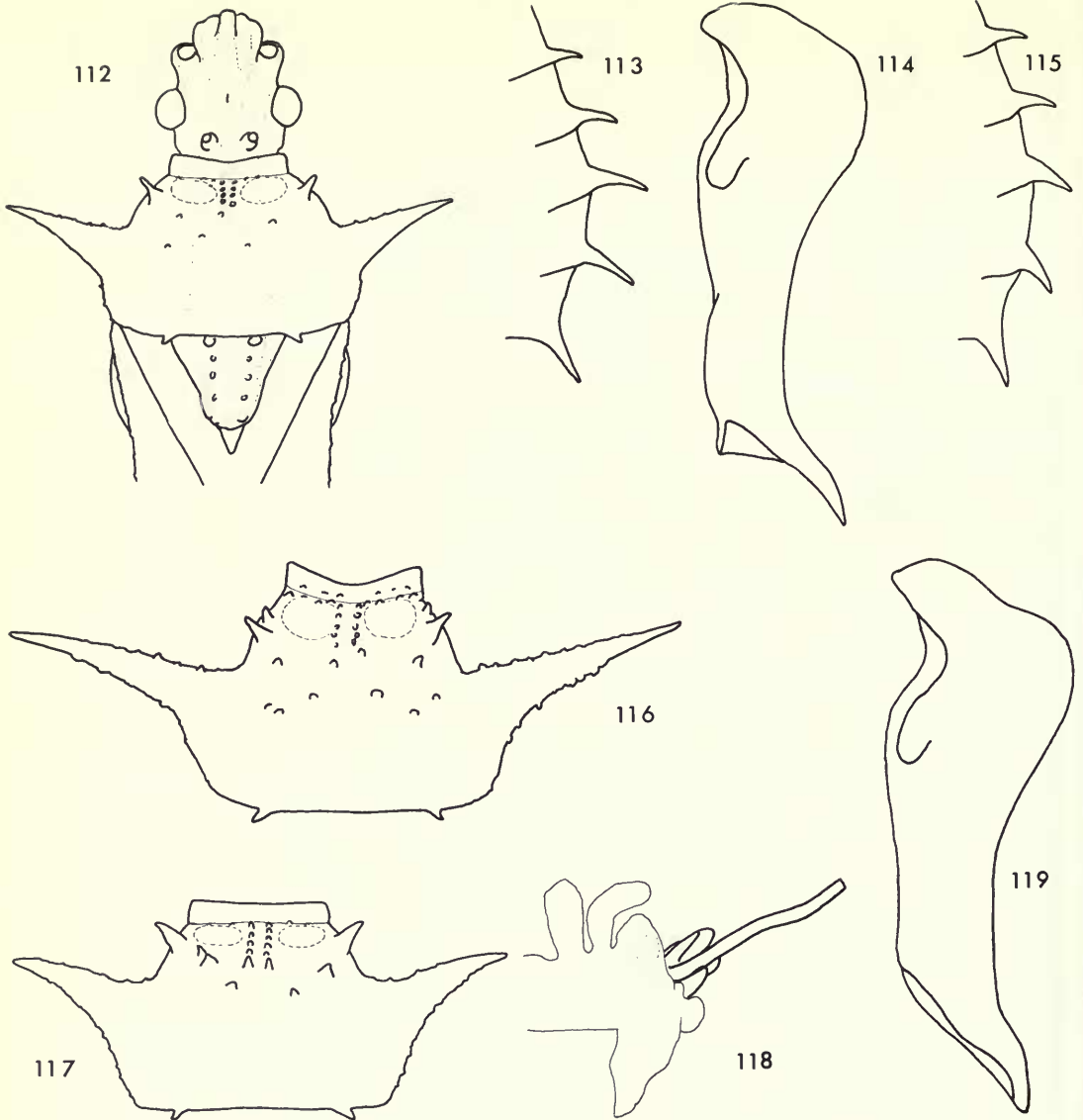
Clavigralla egregia sp. n.

(Fig. 116)

Length: ♀, 9.5 mm (n = 1). Similar to *C. insignis* but differs in the longer, laterally directed posterolateral spines of the pronotum and abdominal sternum. Known only from the female holotype.

Ratio of lengths of antennal segments I : II : III : IV as 1.00 : 0.75 : 0.72 : 0.76; length of segment I divided by width of head including eyes 1.74. Ratio of lengths of rostral segments I : II : III : IV as 1.00 : 0.93 : 0.61 : 1.00.

Pronotum (Fig. 116) with posterolateral angles very strongly produced laterally, width across apices of posterolateral spines divided by width of head including eyes 3.97; disc with several small, blunt spines



Figs 112–119 *Clavigralla* species. (112) *angolensis*, holotype ♂, head, pronotum and scutellum, dorsal view; (113) same, lateral margins of abdominal sternites III–VII, ventral view; (114) same, left paramere, dorsal view; (115) *aculeata*, holotype ♂, lateral margins of abdominal sternites III–VII, ventral view; (116) *egregia*, holotype ♀, pronotum, dorsal view; (117) *aculeata*, holotype ♂, pronotum, dorsal view; (118) same, paratype ♂, conjunctiva and vesica, left lateral view; (119) same, paratype ♂, left paramere, dorsal view.

and one larger, slender spine near the middle of each anterolateral margin. Corium with apical margin straight, at rest with apex reaching to level of base of laterotergite VI. Posterior tibia straight, 0.81 times as long as posterior femur.

Abdominal sternites III–VII with posterolateral angles drawn out laterally into spines almost perpendicular to lateral margin of abdomen. Spermatheca and female genital sclerites as in *C. shadabi* (cf. Fig. 69).

Coloration, pilosity and sculpturing as in *C. insignis*.

REMARKS. Distinguished from similarly coloured species of this group by the very elongate pronotal posterolateral angles, and from all except *C. angolensis* by the radiating abdominal spines.

DISTRIBUTION. Known only from the type-locality in Malawi.

MATERIAL EXAMINED

Holotype ♀, **Malawi**: Mlanje, 17.iii.1913 (*S. A. Neave*) (BMNH, London).

Clavigralla longispina sp. n.

Length: ♂, 8.7 mm (n = 1); ♀, 9.2–9.5 mm, mean 9.3 mm (n = 3). Closely allied to *C. insignis* which it very closely resembles in appearance and coloration.

Ratio of lengths of antennal segments I : II : III : IV in both sexes about 1.00 : 0.76 : 0.75 : – (IV missing in all examples seen); length of segment I divided by width of head including eyes in male 1.53 (n = 1), in female 1.32–1.48 (n = 2). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.87 : 0.59 : 0.95.

Pronotum with posterolateral angles strongly produced, width across apices of posterolateral spines divided by width of head including eyes in male 3.25 (n = 1), in female 3.02–3.16 (n = 2). Length of posterior tibia divided by length of posterior femur in both sexes 0.80–0.83, mean 0.82 (n = 4).

Abdominal sternites III–VII with posterolateral angles produced into spines which are longer and less posteriorly directed than in *C. insignis*. Male paramere indistinguishable from that of *C. insignis*; intermediate dorsal lobe of conjunctiva rather long.

Coloration, sculpture and distribution of pubescence as described for *C. insignis* except that basal annuli of tibiae are red-brown and femora bear pale marmoration in their apical thirds.

REMARKS. Distinguished from *C. insignis* chiefly in the form of the posterolateral spines of the pronotum and abdominal sternites.

DISTRIBUTION. Southern Zaire and northern Zambia.

MATERIAL EXAMINED

Holotype ♂, **Zambia**: Lower Kalungwisi Valley, 1100 m, dense forest, 12–13.ix.1908 (*S. A. Neave*) (UM, Oxford).

Paratypes. **Zaire**: 1 ♀, Bandundu, Malongi, vi.1943 (*H. J. Bredo*) (IRSNB, Brussels). **Zambia**: 1 ♀, Chisanga Plateau, Kalungwisi District, 1400 m, 25.ix.1908 (*S. A. Neave*); 1 ♀, N. Lake Bangweolo, Luwingu, 1300 m, 3.vi.1908 (*S. A. Neave*) (UM, Oxford).

Material excluded from type-series. **Zaire**: 1 ♀, 62 km NE. of Lubumbashi (Elizabethville), 1225 m, 22.i.1958 (*E. S. Ross, R. E. Leech*) (CAS, San Francisco). (Received after description was prepared.)

Clavigralla aculeata sp. n.

(Figs 115, 117–119)

Length: ♂, 8.75–9.1 mm (n = 2); ♀, 9.6–10.0 mm, mean 9.8 mm (n = 3). Rather similar to *C. insignis* in general appearance and coloration.

Antennifers moderately divergent. Ratio of lengths of antennal segments I : II : III : IV in male (1 specimen only) as 1.00 : 0.82 : 0.85 : 0.95; in female (1 specimen only) as 1.00 : 0.86 : 0.90 : 0.82; length of segment I divided by width of head including eyes in male 1.48–1.49 (n = 2), in female 1.39–1.45, mean 1.42 (n = 3). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.88 : 0.70 : 1.01.

Pronotum (Fig. 117) about as steeply declivant as in *C. elongata*, with posterolateral angles directed more strongly forwards; disc with stouter, stronger spines than in *C. insignis* or *C. elongata*; width across apices of posterolateral spines divided by width of head in male 2.68–2.84 (n = 2), in female 2.58–2.86, mean 2.69 (n = 3). Scutellum strongly convex, with two longitudinal rows of 3–4 short, blunt tubercles. Corium with apex distinctly but shortly produced, its apex at rest reaching posteriorly to level of base of laterotergite VI. Anterior and intermediate femora each with a small subapical spine beneath, posterior femur with two major subapical spines, some very small spines between them and an apical series of four spines. Posterior tibia straight, its length divided by that of posterior femur in both sexes 0.82–0.84, mean 0.83 (n = 5).

Abdominal sternites III–VII with posterolateral angles (Fig. 115) produced into strong spines which are slightly but distinctly curved posteriad and more nearly perpendicular to lateral margins of abdomen than

are those of *C. elongata* and *C. insignis*. Male genital capsule with lip broad, paramere (Fig. 119) of similar shape to that of *C. insignis*. Conjunctiva (Fig. 118) with ventral apical lobes and distal ventrolateral lobes developed as in *C. elongata*, dorsomedian lobe low, flat-topped, distal dorsomedian lobe very weakly developed, narrow intermediate dorsal lobe present between dorsomedian and distal dorsomedian lobes, distal dorsolateral lobes absent. Spermatheca as in *C. insignis* (cf. Fig. 105) except that the part of the duct between the 'valve' and the junction with the gynatrium is shorter. Sclerites of wall of gynatrium as in *C. shadabi* (cf. Fig. 69).

Resembles *C. insignis* in distribution of pubescence and in colour pattern but head, thorax, abdomen, femora and antennal segment I paler, gingery brown, and brown markings of clavus and corium less intense.

REMARKS. Distinguished from *C. insignis* by stouter spines of pronotal disc, paler colour and differently shaped abdominal spines and from *C. angolensis* by the shorter pronotal posterolateral spines. Rather similar in appearance to *C. horrida* but lacks the long spines on the scutellum and the additional femoral spines.

DISTRIBUTION. South Africa.

MATERIAL EXAMINED

Holotype ♂, South Africa: Natal, Estcourt, 1896 (BMNH, London).

Paratypes. South Africa: 1 ♂, 2 ♀, Natal, Estcourt, 1896 (BMNH, London); 1 ♀, Transvaal, Zoutpansberg, 800 m, -x.- (Schoutedden) (MRAC, Tervuren).

Clavigralla horrida (Germar) nec auctt. post.

(Figs 120–125)

[*Alydus acantharis* (Fabricius); Thunberg, 1822 : 1. Misidentification based on specimen now at University of Uppsala, examined.]

[*Cimex acantharis* Linnaeus; incorrectly cited in synonymy with *Alydus acantharis* (Fabricius) by Thunberg, 1822 : 1.]

Syromaster horridus Germar, 1840 : 145. LECTOTYPE ♀, SOUTH AFRICA (MNHU, Berlin), here designated [examined].

Clavigralla muricata Stål, 1855 : 31. LECTOTYPE ♂, SOUTH AFRICA (NR, Stockholm), here designated [examined]. [Synonymized with *Clavigralla acantharis* (Fabricius) sensu Thunberg by Stål, 1866 : 108.]

Syn. n. of *horrida*.

[*Clavigralla acantharis* (Fabricius) sensu Thunberg; Stål, 1866 : 108.]

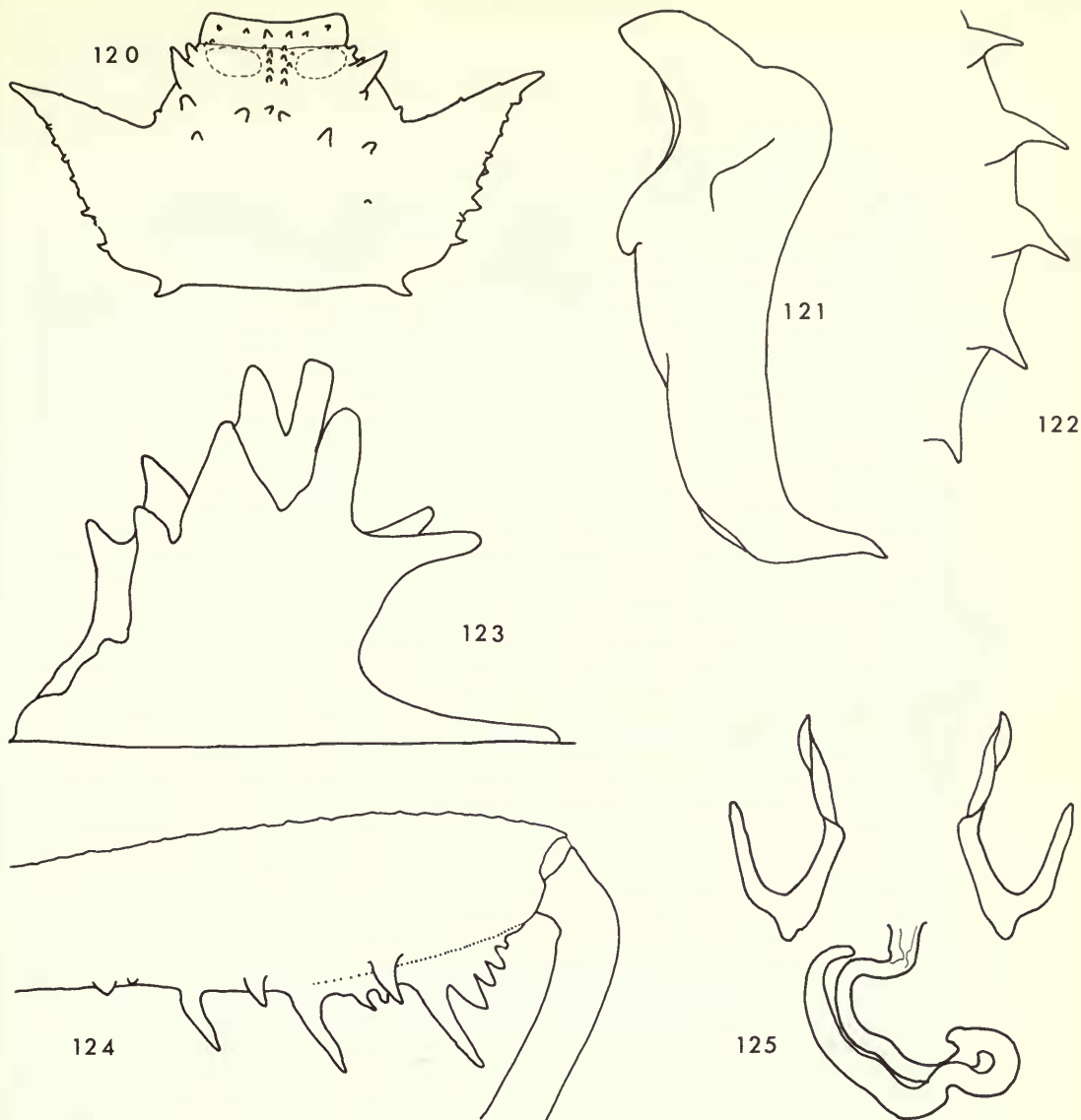
Acanthomia muricata (Stål); Stål, 1873 : 83.

(The binomen *Clavigralla horrida* (Germar) was first used by Stål, 1866 : 108 for the species treated above under the name of *C. elongata* Signoret, q.v.)

Length: ♂, 8.4–9.8 mm, mean 9.2 mm (n = 12); ♀, 9.7–11.0 mm, mean 10.5 mm (n = 13). Related to *C. elongata* but body form more robust.

Antennifers moderately divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.91 : 0.76 : 0.70, in female about 1.00 : 0.94 : 0.78 : 0.70; length of segment I divided by width of head including eyes in male 1.51–1.81, mean 1.65 (n = 13), in female 1.44–1.67, mean 1.54 (n = 13). Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 0.94 : 0.56 : 0.80, in female about 1.00 : 0.90 : 0.54 : 0.76.

Pronotum (Fig. 120) with two prominent, stout spines near middle of anterolateral margins and some smaller ones on disc, some of these arranged in a semicircle terminating anteriorly at the two larger spines; posterolateral angles strongly produced anterolaterally and moderately elevated, each terminating in a short spine; width across apices of posterolateral spines divided by width of head including eyes in male 2.41–2.86, mean 2.64 (n = 11), in female 2.65–3.07, mean 2.86 (n = 13). Scutellum (Fig. 123) strongly elevated with two longitudinal rows of up to 5 stout, erect spines. Corium with apex very slightly produced, at rest reaching posteriorly to level of suture between laterotergites V and VI. Anterior and intermediate femora each with a single subapical spine beneath; posterior femur (Fig. 124) with 3–4 major subapical spines, sometimes 1 or 2 minor spines between prepenultimate and penultimate major spines and between penultimate and last major spines, an apical series of 4 spines and also with a subapical row of up to 3 small spines on posterior edge of lower face of femur. Posterior tibia straight, its length divided by that of posterior femur in both sexes 0.87–0.96, mean 0.91 (n = 25).



Figs 120–125 *Clavigralla horrida*. (120) ♀ pronotum, dorsal view; (121) left paramere, dorsal view; (122) lateral margins of ♀ abdominal sternites III–VII, ventral view; (123) lectotype, scutellum, left lateral view; (124) apex of ♀ right posterior femur, posterior view; (125) spermatheca and sclerites of dorsal wall of gynatrium, dorsal view.

Abdominal sternites III–VII with posterior angles (Fig. 122) produced into broad spines which are much less strongly deflected posteriorly than those of *C. elongata*. Male genital capsule with lip broad, tongue entire; paramere (Fig. 121) with apical margin slightly sinuate. Aedeagus with long, membranous distal dorsolateral lobes, resembling aedeagus of *C. shadabi* (cf. Fig. 70). Spermatheca (Fig. 125) with duct only about as long as bulb, portion of duct between 'valve' and gynatrium very short. Process at apex of second valvula bifid with the lower part of the fork shorter than the upper.

Sculpture of integument as in *C. elongata* but more pronounced on pronotum, where granules on area around posterolateral angles are developed into small, black-tipped spines or tubercles. Pilosity generally as in *C. elongata* but colour of hairs dead white and hairs organized into two more or less distinct longitudinal broad bands on pronotum with a fine band between them along midline. Pubescence of

pronotum otherwise sparse. Colour of head, thorax and abdominal sternites red-brown with piceous markings as in *C. elongata*; spines of pronotum, scutellum and abdominal margins black, at least at apex; antennal segments I and IV, femora and basal annuli of tibiae uniform red-brown; remainder of tibiae, clavus and corium pinkish yellow; antennal segments II and III red. Membrane of hemelytra milky white, its veins in part brown but contrast in colour between membrane and veins not nearly as pronounced as in *C. insignis* and its close allies.

REMARKS. The long, outstanding spines of the scutellum at once distinguish this species from all others in the genus.

DISTRIBUTION. Rhodesia and South Africa.

MATERIAL EXAMINED

Syromaster horridus Germar, lectotype ♀, South Africa: 'Promontorium Bonae Spei' (*C. F. Drège*) (MNHU, Berlin). *Clavigralla muricata* Stål, lectotype ♂, South Africa 'Cap. B. Spei' (*Victorin*) (NR, Stockholm) [Stål, 1855 : 31 cites locality as 'in terra Natalensis'].

Rhodesia: 1 ♂, Vumba Mts, xii.1933 (NM, Bulawayo). South Africa: 1 ♀, 'Caffraria' (NR, Stockholm); 1 ex., 'Caput Bonae Spei' [det. by *C. P. Thunberg* as *Alydus acantharis*] (University of Uppsala); 1 ♂, 1 ♀, 'C.G.H.'; 1 ♂, 1 ♀, 'Cape'; 1 ♂, 'S. Africa' (BMNH, London); 1 ♀, 'British Caffrara Castilneau 1862' (UM, Oxford); 1 ♂, Natal, Cathedral Peak, 18.xii.1966 (*J. G. H. Londt*) (TM, Pretoria); 1 ♀, Cape Prov., Grootvatersbosch, For. Res. 22 km N. of Heidelberg, 5.ii.1968 (*Schuh, Slater, Sweet & Slater*) (Slater coll.); 1 ♂, Cape Prov., Simonstown, ii.1893 (*P. de la Garde*) (UM, Oxford); 1 ♀, Cape Prov., 21 km E. of Gansbaai, 2.ii.1968 (*J. A. & S. Slater & M. Sweet*) (PPRI, Pretoria); 1 ♂, 2 ♀, Cape Prov., Stellenbosch, 5.xi.1925 (*H. Brauns*); 1 ♂, 1 ♀, Cape Prov., Swellendam, 17.xii.1931–18.i.1932 (*R. E. Turner*); 1 ♀, no data; 8 ♂, 9 ♀, Cape Prov., Ceres, 450 m, xii.1920, i.1921, ii.1921, 2–21.iii.1921, 1–12.xi.1924, xii.1924, ii.1925 (*R. E. Turner*) (BMNH, London); 1 ♀, Cape Prov., Pearl, 16.xi.1949 (*Malkin*); 1 ♂, Cape Prov., Du Toits Kloof, 22.xi.1949 (*B. Malkin*) (CAS, San Francisco).

Clavigralla natalensis Stål

(Figs 126–130)

Clavigralla natalensis Stål, 1855 : 31. LECTOTYPE ♀, SOUTH AFRICA (NR, Stockholm), here designated [examined].

Acanthomia natalensis (Stål) Stål, 1873 : 83.

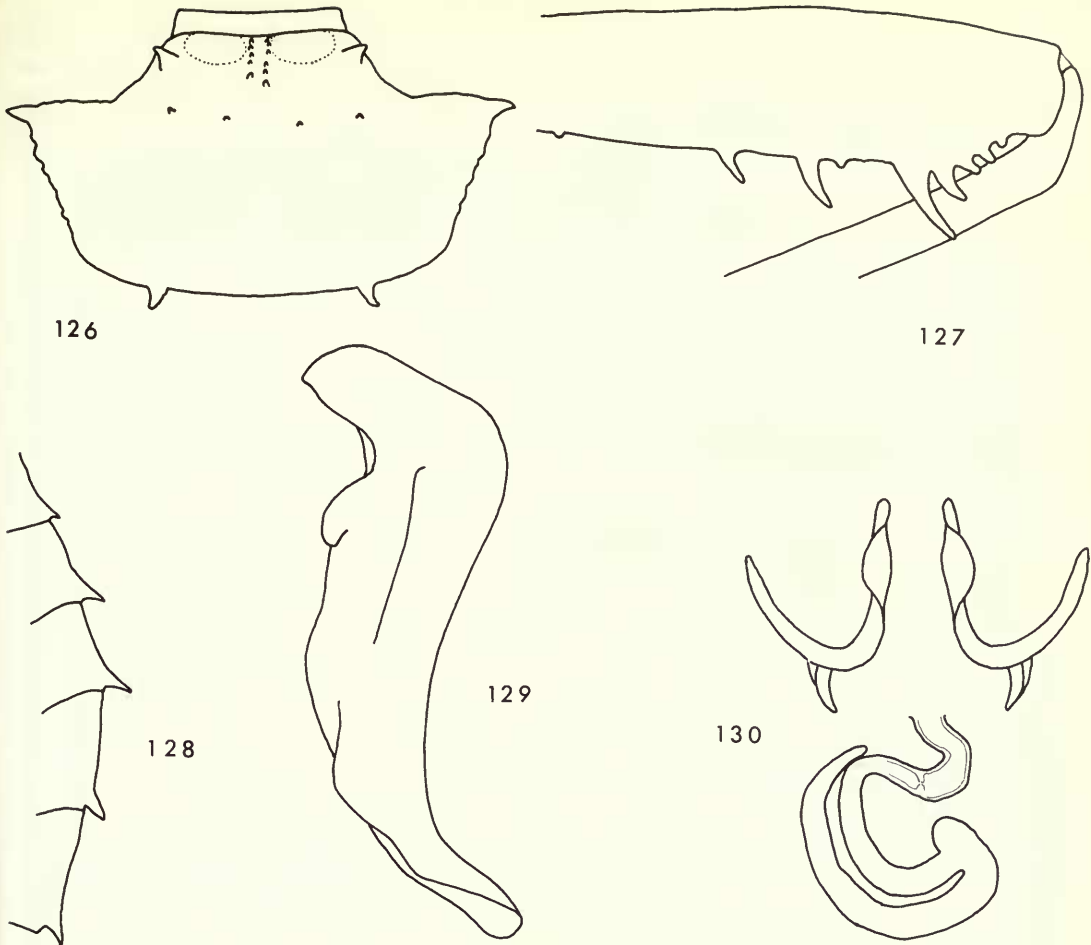
Length: ♂, 9.2–10.4 mm, mean 9.9 mm ($n = 4$); ♀, 10.6–12.0 mm, mean 11.8 mm ($n = 14$). The most robust of the species allied to *C. elongata*.

Antennifers moderately divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.86 : 0.80 : 0.92, in female about 1.00 : 0.85 : 0.78 : 0.85 (figure for male segment IV is based on only two observations and is the mean of 0.82 and 1.02); length of segment I divided by width of head including eyes in both sexes 1.16–1.38, mean 1.27 ($n = 18$). Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 0.97 : 0.71 : 1.06, in female about 1.00 : 0.90 : 0.67 : 1.00.

Pronotum (Fig. 126) strongly declivent, with a semicircle of small spines on disc, posterolateral angles much less strongly produced than in related species, tipped with short spines; width across apices of posterolateral spines divided by width of head including eyes in male 2.39–2.69, mean 2.53 ($n = 4$), in female 2.43–2.77, mean 2.62 ($n = 14$). Scutellum slightly longer than broad, weakly convex, with two longitudinal rows of large granules. Corium with apex produced, at rest reaching posteriorly to about one-third of the way along laterotergite VI. Anterior and intermediate femora each with a strong subapical spine beneath; posterior femur (Fig. 127) with 3–5 major spines beneath, increasing in length towards apex of femur, without minor spines between them, apical series of 4 spines present but no additional posterior row of spines (cf. *C. horrida*). Posterior tibia straight, its length divided by that of posterior femur in both sexes 0.83–0.92, mean 0.88 ($n = 18$).

Abdominal sternites III–VII with posterior angles (Fig. 128) produced into short, posteriorly directed spines. Male genital capsule with lip broad, tongue entire; paramere (Fig. 129) stout. Conjunctiva generally as in *C. elongata* except for distal dorsomedian lobe, which is lower. Female with bifid apical process of second valvula well developed. Spermatheca (Fig. 130) with bulb narrow and duct short, sclerites of dorsal wall of gynatrium (Fig. 130) slender.

Sculpture of integument generally as in *C. elongata* but granulation everywhere weaker. Pubescence of head, pronotum, scutellum, thoracic pleura, thoracic and abdominal sterna, femora and antennal segment I almost uniform, consisting of short, colourless, suberect to erect hairs interspersed with short, decum-



Figs 126-130 *Clavigralla natalensis*. (126) pronotum of ♀, dorsal view; (127) apex of left posterior femur, anterior view; (128) lateral margin of ♂ abdominal sternites III-VII, ventral view; (129) left paramere, dorsal view; (130) spermatheca and sclerites of dorsal wall of gynatrium, dorsal view.

bent, white, curled but not tomentose hairs, organized into a thin, sometimes indistinct line along midline of pronotum and a line on each side of vertex contiguous with each eye. Clavus, corium and abdominal laterotergites with similar but shorter and sparser pubescence of both types; antennal segments II-IV, tibiae and tarsi with short, suberect pubescence interspersed with very short, indistinct, decumbent pubescence. Colour largely red-brown; antennae with segments I-III paler and segment IV darker than general body coloration; abdominal sternites slightly paler; clavus and corium testaceous, veins coloured brown or red-brown, especially in anterior and distal areas of corium, membrane very pale fuscous, its veins brown, uninterrupted; all tibiae stramineous with basal annulus piceous and apical annulus red-brown.

REMARKS. A distinctive species by reason of the heavy build and the shape of the pronotum.

DISTRIBUTION. Africa south of the Zambesi river.

MATERIAL EXAMINED

Clavigralla natalensis Stål, lectotype ♀, **South Africa:** 'Caffraria' (*J. Wahlb.*) (NR, Stockholm).

Rhodesia: 1 ♀, Mashonaland, Salisbury, 1898 (BMNH, London). **South Africa:** 1 ♂, Transvaal, Johannesburg E., Bedford Ridge, 25.x.1953 (*A. L. Capener*) (Slater coll.); 1 ♀, Johannesburg, 5.ii.1958

(*Capener*) (Slater coll.); 1 ♂, Johannesburg, 1800 m, x.1898 (*J. P. Cregoe*); 1 ♀, Johannesburg, 1800 m, vi.1899 (*Cregoe*); 1 ♀, Johannesburg, 1.v.1905 (*Cregoe*); 1 ♂, Transvaal, Klerksdorp, Snowball, ix.1899; 1 ♂, Transvaal, Lydenberg District (BMNH, London); 2 ♀, Orange Free State, Bothaville (*Dr Brauns*) (TM, Pretoria); 2 ♀, Natal, Pietermaritzburg, 1902 (*Cregoe*); 1 ♀, Natal, Drakensberg, Van Reenen, 1-22.i.1927 (*R. E. Turner*); 1 ♀, Natal, Estcourt, viii.1895; 1 ♀, Natal, Howick, 1806; 1 ♀, Howick (BMNH, London); 1 ♂, Transvaal, Veekraal, 14.xii.1963 (*A. L. Capener*) (PPRI, Pretoria); 1 ♀, Natal, Bray Hill, viii, Gram (BMNH, London).

The *tomentosicollis*-group

Antennifer with apical process long, deflexed; metathoracic peritreme with dorsal ridge entire; tongue of male genital capsule trifold, bifid or entire; lip of genital capsule filling posterior emargination in posterior view; pubescence of anterior, declivent area of pronotum contrasting strongly in form and colour with that of posterior, horizontal part. Second valvula of ovipositor variously shaped but never with apical appendage. Pronotum with posterolateral angles not or relatively weakly prominent, posterolateral spines arising abruptly from them.

The *leontjevi*-subgroup

Tongue of male genital capsule entire; pronotal disc without sublateral tubercles; membrane of hemelytron unpigmented.

Clavigralla leontjevi (Bergróth) comb. n.

(Figs 131-136)

Acanthomia leontjevi Bergróth, 1908 : 107. LECTOTYPE ♂, ETHIOPIA (ZMU, Helsinki), here designated [examined].

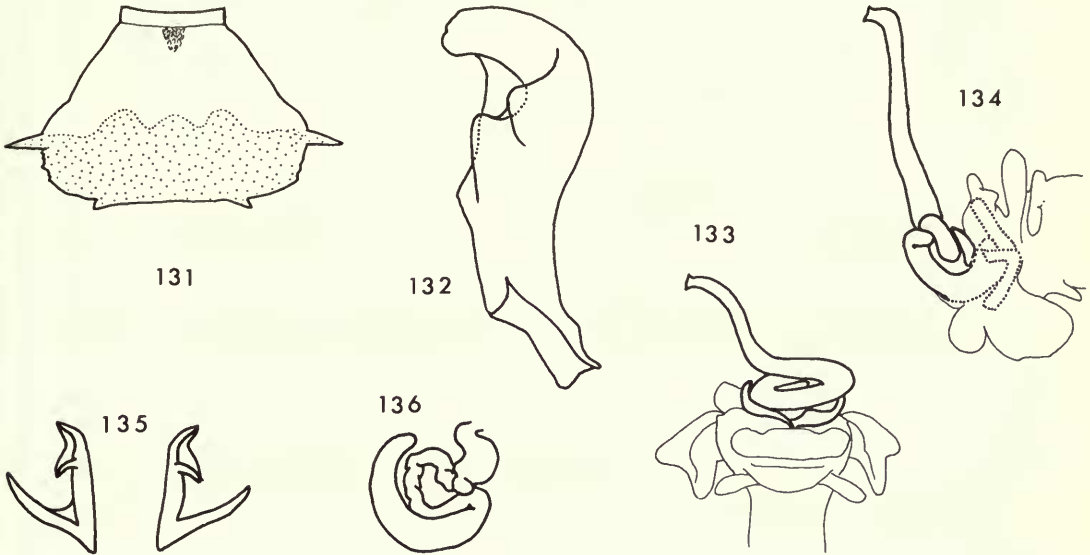
Length: ♂, 6.0-7.1 mm, mean 6.6 mm ($n = 22$); ♀, 5.9-7.5 mm, mean 6.9 mm ($n = 21$). A small insect, similar in appearance to a small *C. tomentosicollis*.

Head subquadrate; antennifers very slightly divergent. Length of antennal segment I divided by width of head including eyes in male 1.07-1.29, mean 1.21 ($n = 22$), in female 1.06-1.30, mean 1.17 ($n = 21$). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.78 : 0.66 : 1.00, in female about 1.00 : 0.78 : 0.67 : 0.96. Length of basal segment of rostrum divided by width of head including eyes in male 0.60-0.72, mean 0.65 ($n = 20$), in female 0.61-0.69, mean 0.66 ($n = 16$). Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 0.91 : 0.63 : 0.95, in female about 1.00 : 0.88 : 0.60 : 0.91.

Pronotum (Fig. 131) with posterolateral angles bearing slender spines directed laterally or slightly antero- or posterolaterally, spines gently upcurved; width of pronotum across apices of spines divided by width of head including eyes in male 2.36-2.95, mean 2.54 ($n = 18$), in female 2.34-3.00, mean 2.55 ($n = 18$). Disc of pronotum with a cluster of granules in anterior part of midline but completely without projecting tubercles or spines, even near lateral margins. Scutellum strongly convex. Anterior and intermediate femora each with 0-1 subapical spine beneath; posterior femur with 2 major subapical spines beneath, the second about one and one-half times as long as the first, about 5 small spines present between the major spines and a terminal series of four spines present. Posterior tibia distinctly curved at base, length of posterior tibia divided by length of posterior femur in male 0.66-0.74, mean 0.70 ($n = 21$), in female 0.64-0.74, mean 0.69 ($n = 19$). Apex of corium at rest reaching to level of suture between laterotergites V and VI.

Abdominal sternites III-VII with posterolateral angles produced into well-developed, acute spines, each spine about one-third as long as lateral margin of corresponding sternite. Male genital capsule with tongue broadly rounded distally; paramere (Fig. 132) with apex strongly inflexed and with two well-developed teeth on blade, the distal one more strongly sclerotized than the other and sited on the dorsal face. Aedeagus (Figs 133, 134) with vesica long, sclerites at its base large, together almost as wide as conjunctiva. Conjunctiva with dorsomedian lobe very low, its lateral angles strongly produced, intermediate dorsal lobe separated from distal dorsomedian lobe, which is weakly developed as are distal dorsolateral lobes; distal ventrolateral lobes the largest, apical ventral and ventral lobes present; none of the lobes sclerotized. Female tergite IX apically deflexed, anus directed posteroventrally. Spermatheca (Fig. 136) with duct short, slightly convoluted and rather wide especially near junction with gynatrium. Sclerites of dorsal wall of gynatrium (Fig. 135) each with an anterolaterally directed spur arising from the longitudinal arm. Laterotergite VII clearly separated from mediotergite VII in both sexes.

Sculpture of integument as in *C. tomentosicollis*. Pubescence and coloration generally similar to those of *C. tomentosicollis*. Pale, declivent area of pronotum interrupted by a small patch of piceous granules in anterior midline; area of pale pubescence projecting posteriorly into the patch of darker pubescence behind it in four places, the two pale prominences nearest midline tending to project as backward sloping tufts and without a tuft of darker hairs between them; midline of posterior, dark brown area frequently with an incipient line of pale, silvery hairs. Hemelytral membrane slightly milky, hyaline, its only dark markings being two very small piceous or brown blotches on two veins at the point where these enter the membrane from the apical margin of the corium.



Figs 131–136 *Clavigralla leontjevi*. (131) pronotum of ♂, dorsal view; (132) left paramere, dorsal view; (133) conjunctiva and vesica, dorsal view; (134) same, left lateral view; (135) sclerites of dorsal wall of gynatrium, dorsal view; (136) spermatheca.

REMARKS. This species differs from all others in the genus in the complete absence of large tubercles or spines from the declivent area of the pronotum. Another unique feature is the partially deflexed tergum IX and anus of the female, approaching the condition which obtains in the genus *Gralliclava* in the Oriental region. The complete separation of laterotergites VII from mediotergite VII in the male is also unique. However, in most features this species accords well with the characters of the *tomentosicollis*-group of species. There is some variation in the pronotal posterolateral spines, which may be directed slightly anterolaterally, laterally or slightly posterolaterally, and in the amplitude of the undulations in the line marking the boundary between the pale and dark areas of pronotal pubescence. The male paramere is frequently slightly narrower than the example illustrated (Fig. 132), in which an incipient third tooth is visible on the ventromedian area of the blade at its junction with the shaft. This third tooth is usually not as strongly developed as that illustrated and may often be absent. From the material available it is not possible to make a definite statement as to the status of these variants but they do not appear to be correlated one with another, nor do they seem to vary consistently on a geographical basis. Risbec (1950; 1951; 1955) records the following Hymenoptera as parasites of the egg: *Anastatus aliberti* Risbec and *A. nezarae* Risbec (Eupelmidae), *Paravignalia hemipterae* Risbec (Pteromalidae) and *Gryon gnidus* Nixon (Scelionidae).

DISTRIBUTION. Africa between the Sahara desert and the Zambesi river.

MATERIAL EXAMINED

Acanthomia leontjevi Bergróth, lectotype ♂, Ethiopia: Adué, 1896 (other data illegible) (ZMU, Helsinki).

Senegal: 3 ♂, Bambeý, 29.i.1943, on potato (*J. Risbec*); 2 ♀, Bambeý, iv.1940 (*Risbec*) (BMNH, London). **Ivory Coast:** 2 ♂, Lamto (Toumodi), 24.vii.1964; 1 ♀, Lamto, 4.xii.1962 (BMNH, London). **Ghana:** 2 ♂, 3 ♀, Kintampo, 7.xii.1965 (*D. Leston*); 4 ♂, 1 ♀, Tafo, 3.i.1967, 21.i.1967, 13.ii.1967, 30.iii.1967, by pyrethrum knockdown from cocoa (*Theobroma*) (*R. Kumar, D. Leston*); 1 ♂, locality illegible, 7.x.1967 (*Leston*); 1 ♂, Twenadurasi, 28.i.1967 (*Leston*); 1 ♂, Tapa Amonyá, Volta Region, 3.xi.1967; 1 ♀, Prampram, 27.viii.1966 (UG, Legon). **Togo:** 1 ♀, Missahoué, 650 m, vi.1963 (*Mme Y. Schach*) (MRAC, Tervuren). **Nigeria:** N. Nigeria, Chafe, 7.vii.1977 (*J. C. Deeming, A. O. Medaiyedu*); 1 ♀, Zaria, Samaru, 12.i.1970 (*J. C. Deeming*) (IAR, Samaru); 1 ♀, Ilorin, 13.xii.1929, on cotton (*Gossypium*) (*F. D. Golding*); 1 ♂, 2 ♀, Jos, 9.i.1956 (*Bechyne*) (BMNH, London). **Zaire:** 1 ♀, Faradje, 29° 40' E, 3° 40' N, xii.1912 (*Lang, Chapin*) (AMNH, New York); 1 ♂, Ngowa, 5.vi.1939 (*R. P. J. Mertens*); 2 ♂, Musoa, vi-vii.1939, xi.1939 (*H.-J. Brédo*) (IRSNB, Brussels). **Angola:** 2 ♀, no exact data (*Welwitsch*) (BMNH, London and Duarte coll.). **Sudan:** 1 ♂, 2 ♀, Blue Nile, Singa-Damazín, 15-17.xi.1962 (*R. Linnavuori*) (BMNH, London). **Kenya:** 1 ♀, Kisumu, 1143 m, xi.1920 (*Gedye*); 1 ♂, Thika, ix.1936 (*F. J. Gedye*) (BMNH, London). **Tanzania:** 1 ♂, E. Rukwa, 1050 m, iv.1938 (*D. G. McInnes*); 1 ♂, Urikiriguru, 25.viii.1958 (*I. A. D. Robertson*); 1 ♀, Urikiriguru, 19.ix.1958, on cotton (*Gossypium*) (*Robertson*) (BMNH, London). **Malawi:** 1 ♀, Valley of N. Rukuru, Karonga District, 600-1200 m, 15-18.vii.1910 (*S. A. Neave*) (BMNH, London). **Zambia:** 1 ♀, Abercorn, 15.xii.1943 (*H.-J. Brédo*) (IRSNB, Brussels). **Rhodesia:** 1 ♀, Lomagundi, vi.1929 (*A. Cuthbertson*) (NM, Bulawayo).

Clavigralla griseola (Linnavuori) comb. n.

Acanthomia griseola Linnavuori, 1978: 35. Holotype ♀, SOUTHERN YEMEN (Linnavuori coll.) [not examined].

This species was described too late to be included in the key. It is very close to *leontjevi*. I have seen a single ♀ paratype, from Eritrea. This specimen differs from *leontjevi* in the more intense dark markings, particularly those of the femora; the width of the pronotum divided by that of the head is only 2.29 and the antennae are longer, the length of segment I divided by width of head being 1.31. Southern Yemen and Ethiopia (Eritrea).

The *ruandana*-subgroup

Tongue of male genital capsule entire; pronotal disc with a pair of large, blunt tubercles sublaterally; membrane of hemelytron suffused with brown pigment.

Clavigralla ruandana (Schouteden) comb. n.

(Figs 137-143)

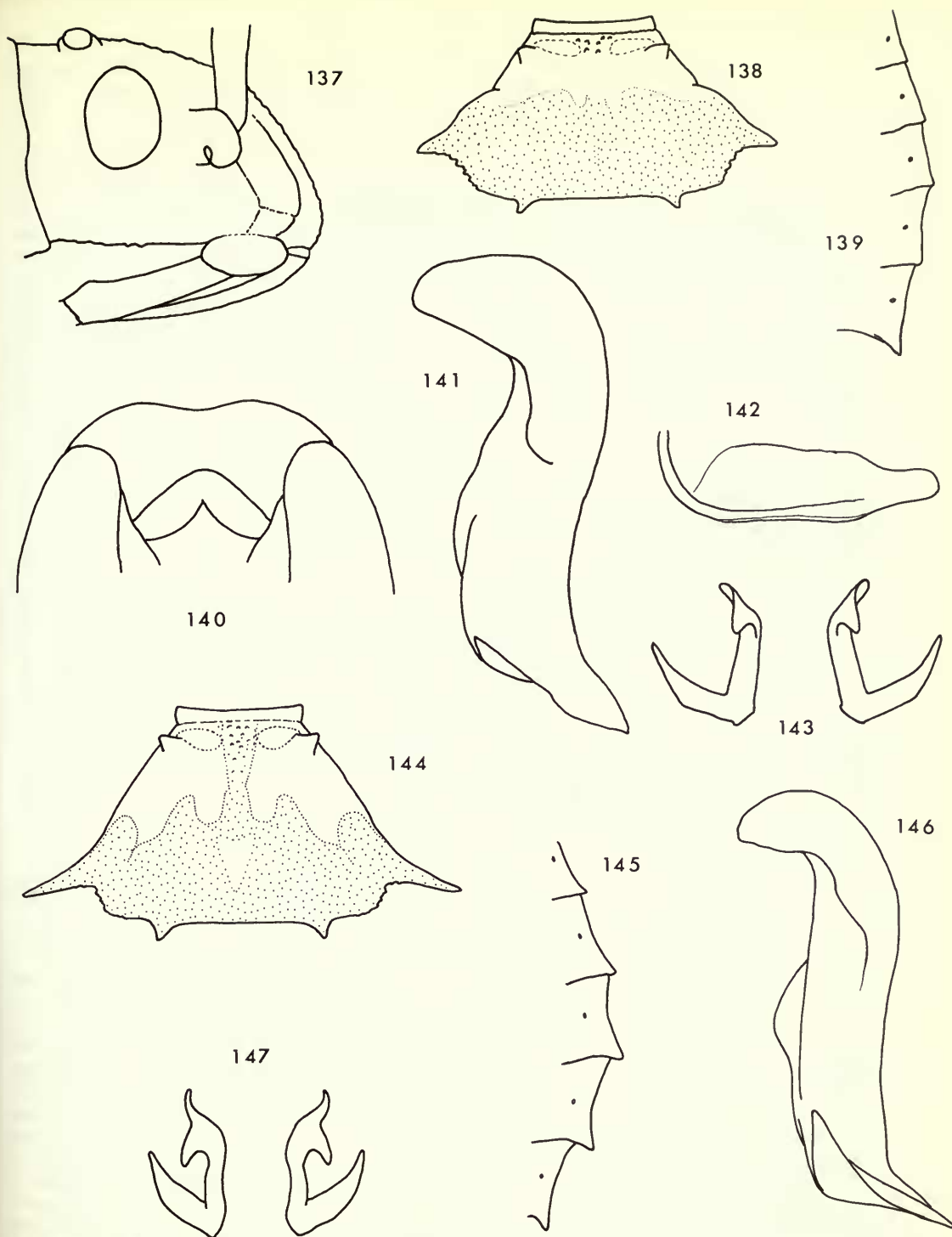
Acanthomia ruandana Schouteden, 1957: 309-310. LECTOTYPE ♂, RWANDA (MRAC, Tervuren), here designated [examined].

Length: ♂, 9.0-10.0 mm, mean 9.5 mm (n = 8); ♀, 9.3-10.6 mm, mean 9.9 mm (n = 9). Rather more slender than *C. tomentosicollis*, which it somewhat resembles.

Head (Fig. 137) elongate. Length of antennal segment I divided by width of head including eyes in male 0.87-1.11, mean 1.00 (n = 8), in female 0.80-1.10, mean 0.97 (n = 9). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 1.05 : 0.73 : 1.12, in female about 1.00 : 1.07 : 0.75 : 1.06. Length of basal segment of rostrum divided by width of head including eyes in both sexes 0.81-1.01, mean 0.91 (n = 17). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.94 : 0.59 : 0.90.

Pronotum (Fig. 138) with posterolateral spines short, directed slightly posteriorly. Width of pronotum across apices of posterolateral spines divided by width of head including eyes in male 2.48-3.06, mean 2.66 (n = 8), in female 2.31-2.79, mean 2.56 (n = 9). Scutellum strongly convex. Corium with apex produced, at rest reaching level of middle of laterotergite VI. Posterior tibia almost straight; length of posterior tibia divided by that of posterior femur 0.73-0.82, mean 0.77 (n = 17).

Abdominal sternites III-VI with posterolateral angles (Fig. 139) very slightly prominent, not acute, posterolateral angle of sternite VII acutely projecting in male, narrowly rounded in female. Male genital capsule (Fig. 140) with lip shallowly emarginate, tongue narrowly rounded. Paramere (Fig. 141) falcate, apex strongly curved medially, tooth at mid-point of blade small. Conjunctiva with dorsomedian lobe bearing large, finger-like, erect lobes at its posterolateral angles; intermediate dorsal, distal dorsomedian and distal dorsolateral lobes poorly developed; apical ventral and distal ventrolateral lobes well developed; ventral lobes very small; none of the lobes sclerotized. Second valvula of ovipositor (Fig. 142) slender,



Figs 137-147 *Clavigralla* species. (137) *ruandana* ♀, head, right lateral view; (138) same, lectotype ♂, pronotum, dorsal view; (139) same, left lateral margin of ♂ abdominal sternites III-VII, ventral view; (140) same, apical half of ♂ genital capsule, dorsal view; (141) same, left paramere, dorsal view; (142) same, second valvula, lateral view; (143) same, sclerites of dorsal wall of gynatrium, dorsal view; (144) *biston*, ♀ pronotum, dorsal view; (145) same, left lateral margin of ♀ abdominal sternites III-VII; (146) same, left paramere, dorsal view; (147) same, sclerites of dorsal wall of gynatrium, dorsal view.

apical third abruptly narrower than basal two-thirds; sclerites of dorsal wall of gynatrium (Fig. 143) with longitudinal arms abruptly divergent at apices and barbed; spermatheca similar to that of *C. tomentosicollis* except that bulb is distinctly narrower, duct slightly longer and sometimes with incipient convolutions.

Sculpture as in *C. tomentosicollis*. General coloration a slightly rufous brown, clavus and corium paler. Piceous markings variable, generally comprising a streak occupying ventral surface of antennal segment I, the whole ventral surface and often parts of sides of head, thoracic sterna, a horizontal bar on each of the thoracic pleura, a patch in anterior midline of pronotum, posterolateral spines and sublateral tubercles of disc of pronotum, base of scutellum, spots on femora, base of abdominal venter except midline and a broad, lateral, marginal band on abdominal sterna III–VI, sometimes III–VII, rarely only III–IV. Stramineous areas include tibiae except for basal, apical and usually median annuli, bases of femora and often antennal segments II and III. Membrane of hemelytron infusate with veins and basal cells colourless. Pubescence generally as in *C. tomentosicollis* but often with an incipient longitudinal band of pale hairs along midline of posterior lobe of pronotum and usually with a narrow band of dense, silvery or golden hairs along apical margin of corium and clavus contrasting strongly with the almost uniform colouring and pubescence of the remainder of these parts. Colour of abdominal dorsum varying from almost uniformly orange to largely piceous.

REMARKS. *C. ruandana* belongs to a group of species in which the head is elongate and the rostrum at rest reaches beyond the posterior margin of the mesosternum. Within this group it is distinguished by the basal antennal segment being subequal in length to the width of the head, the non-acute posterolateral angles of abdominal sterna III–VI, the absence of discrete spots on the forewing membrane and the moderately long posterolateral pronotal spines. A single female from Rhodesia is of a pale, golden-brown colour with few piceous markings. It is not possible to say if this difference is due to a difference in the genetic constitution of the populations in Rhodesia and elsewhere or if the specimen is merely teneral.

DISTRIBUTION. Highlands of central Africa, mostly around the Rift Valley.

MATERIAL EXAMINED

Acanthomia ruandana Schouteden, lectotype ♂, Rwanda: Contrefort Est Muhavura, 2100 m, 28.i.1953 (*P. Basilewsky*) (MRAC, Tervuren).

Rwanda: 1 ♂, same data as lectotype; 2 ♀, Contrefort Sud Nyamateke, 2200 m, 15.xi.1953 (*Basilewsky*), all paralectotypes of *Acanthomia ruandana* (MRAC, Tervuren). **Zaire:** 3 ♂, 2 ♀, Tshibinda [‘Tanganyika T., Tshibinda’ on labels], 21–27.viii.1931 (*Prof. T. D. A. Cockerell, Miss A. Mackie*) (BMNH, London); 1 ♂, 1 ♀, Kivu, Mulugu, Tshibinda, xi.1951 (*P. C. Lefèvre*) (MRAC, Tervuren); 3 ♀, Lualaba river, 750–1200 m, 31.v.1907 (*Neave*) (BMNH, London); 1 ♂, Malongi, vi.1943 (*H. J. Brédo*) (IRSNB, Brussels). **Zambia:** 1 ♂, 1 ♀, Chisinga Plateau, Kalungwisi District, 1400 m, 17.ix.1908 (*S. A. Neave*) (UM, Oxford). **Rhodesia:** 1 ♀, Mtarazi Falls, iii.1957 (*N. L. H. Krauss*) (BMNH, London).

Clavigralla biston sp. n.

(Figs 144–147)

Length: ♂, 9.3 mm ($n = 2$); ♀, 8.7–10.7 mm, mean 9.6 mm ($n = 7$). Resembles *C. ruandana* in most features and probably closely related to that species, differing chiefly in the more pronounced pronotal spines.

Head elongate. Length of antennal segment I divided by width of head including eyes in male 1.32–1.38 ($n = 2$), in female 1.35–1.43, mean 1.38 ($n = 7$). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.85 : 0.68 : – (IV missing in both specimens seen), in female about 1.00 : 0.87 : 0.68 : 0.92. Length of basal segment of rostrum divided by width of head including eyes in both sexes 0.70–0.79, mean 0.74 ($n = 9$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.86 : 0.54 : 0.87.

Pronotum (Fig. 144) with posterolateral spines rather long, directed posterolaterally; width across apices of spines divided by width of head including eyes in male 2.58–2.72 ($n = 2$), in female 2.69–2.93, mean 2.79 ($n = 5$). Scutellum strongly convex. Corium with apex narrowly produced, at rest reaching to level of base of laterotergite VI. Posterior tibia gently curved at base, its length divided by that of posterior femur 0.73–0.79, mean 0.75 ($n = 8$).

Abdominal sternites with posterolateral angles triangularly produced (Fig. 145). Male genital capsule with lip broadly rounded, tongue rather narrow and parallel-sided for most of its length, apex rounded or

bluntly angulate. Paramere (Fig. 146) with apex strongly angled inwards, tooth at middle of blade moderately prominent. Aedeagus as described for *C. oxonis* (Fig. 152) except that all parts of ejaculatory reservoir complex are smaller and vesica is shorter, its non-coiled portion subequal in length to rest of aedeagus. Second valvula of ovipositor of similar general shape to that of *C. oxonis* (Fig. 153) but with apical lobe rather broader. Spermatheca as in *C. oxonis* (cf. Fig. 149). Sclerites of dorsal wall of gynatrium (Fig. 147) with recurved processes on median arms large. Coloration generally bright orange-brown (not red-brown as in its relatives), with darkest markings, on sides and ventral surface of head, thorax and abdomen, usually red-brown or brown (not piceous). Pronotum (Fig. 144) with midline of declivent area occupied by a band of brown pubescence terminating posteriorly in a tuft of erect, brown hairs flanked by two narrow projections of the area of silvery pubescence, these projections themselves each flanked on the outer side by a triangular area of erect, brown pubescence. Posterior lobe of pronotum behind this area with decumbent, golden-brown pubescence except for posterior margin and a more or less distinct, longitudinal, rectangular or triangular area in midline, where the decumbent pubescence is silvery. Scutellum with rather long, slightly tomentose pubescence and a pair of tufts of erect, brown hairs on disc. Clavus and most of corium pale orange-brown with short, crisped, semidecumbent, silvery to golden-brown pubescence, corium with a very distinct band close to apical margin brown, with short, suberect, brown pubescence, apical margin with a narrow band of silvery pubescence contrasting strongly with the broader, brown band. Produced apical part of corium pale rufous with short, silvery to golden, semidecumbent pubescence. Membrane infumate between the colourless longitudinal veins, the brown coloration slightly more intense in middle.

REMARKS. A distinctive species by reason of the shape of the pronotum and bright coloration.

DISTRIBUTION. Highlands in the vicinity of the Rift Valley.

MATERIAL EXAMINED

Holotype ♂, **Malawi:** Cholo, 1919–1920 (*R. C. Wood*) (BMNH, London).

Paratypes. **Malawi:** 1 ♂, 1 ♀, Cholo, 1919–1920 (*R. C. Wood*) (BMNH, London). **Zambia:** 1 ♂, 4 ♀, Mid Luangwa Valley, 600 m (2000 ft), 14–16.viii.1900 (*S. A. Neave*) (BMNH, London). **Tanzania:** 1 ♀, Lulangu, 27 km (17 miles) W. of Tabora, xi.1917, on bushes (*G. D. H. Carpenter*) (BMNH, London).

Rhodesia: 1 ♀, Manica, Mpudzi River, c. 900 m (3000 ft), 26.x.1905 (*Guy Marshall*) (UM, Oxford).

Material excluded from type-series. **Angola:** 1 ♂, Caconda, Huile, 30.ix.1949 (*Borys Malkin*) (CAS, San Francisco). (Received after description was prepared.)

Clavigralla oxonis sp. n.

(Figs 148–153)

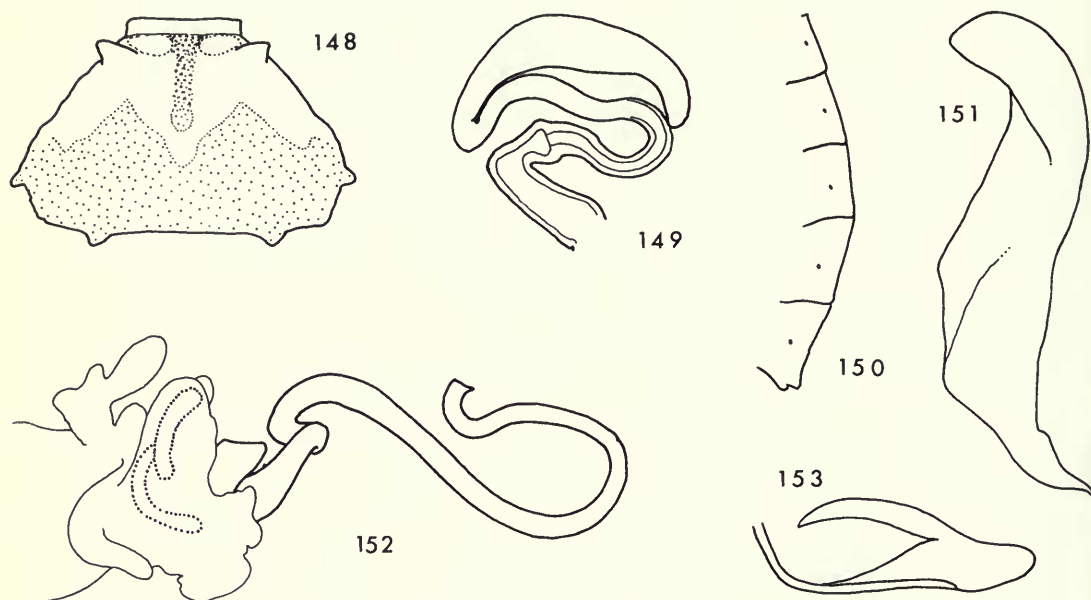
Length: ♂, 8.9 mm ($n = 1$); ♀, 9.0–9.1 mm ($n = 2$). Resembles *C. ruandana* in general build, but differs in many details including shape of pronotum.

Head elongate. Antennal segment I very short, its length divided by width of head including eyes in male 0.75 ($n = 1$), in female 0.79–0.84 ($n = 2$). Ratio of lengths of antennal segments I : II : III : IV in male unknown (specimen mutilated), in female about 1.00 : 1.13 : 0.84 : 1.33. Length of segment I of rostrum divided by width of head including eyes in both sexes 0.94–1.02, mean 0.99 ($n = 3$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.93 : 0.61 : 0.87.

Pronotum (Fig. 148) with posterolateral angles not prominent, posterolateral spines reduced to short tubercles or (male holotype) evanescent; width across apices of these posterolateral tubercles divided by width of head including eyes in male 2.15 ($n = 1$), in female 2.24–2.41 ($n = 2$). Scutellum strongly convex. Corium with apex at rest reaching to about level of suture between laterotergites V and VI. Posterior tibia gently arcuate in basal third, its length divided by that of posterior femur 0.68–0.73, mean 0.70 ($n = 3$).

Abdominal sternites III–VII with posterolateral angles rounded, not prominent except in segment VII of male (Fig. 150). Male genital capsule with lip evenly rounded, tongue narrowly rounded as in *C. ruandana* (cf. Fig. 140). Paramere (Fig. 151) falcate, tooth at middle of blade obsolete. Aedeagus (Fig. 152) with vesica very long, sclerites at its base and wings and straps of ejaculatory reservoir complex large, symmetrical. Conjunctiva with dorsomedian lobe large, bearing well-developed, sac-like outgrowths at its posterolateral angles, intermediate dorsal, distal dorsomedian and distal dorsolateral lobes weakly developed, apical, ventral and distal ventrolateral lobes well developed, ventral lobes absent. Second valvula of ovipositor (Fig. 153) slender. Sclerites of dorsal wall of gynatrium not differing from those of *C. ruandana*. Spermatheca (Fig. 149) with wide portion of duct rather long, narrow portion not convoluted, bulb narrow.

Pronotum, scutellum, thoracic pleura, apical half of each femur and apical one-third to half of corium reddish brown; ventral surface of head, base of scutellum, thoracic sterna, midline of declivent part of pronotum, base of abdominal venter medially and sometimes lateral stripes on head and thoracic pleura piceous; head, clavus, base of corium, antennal segments I and IV and abdominal sternites pale reddish brown; laterotergites obscurely patterned with pale and dark reddish brown; antennal segments II and III, tibiae, tarsi and bases of femora stramineous; forewing membrane brown, veins and basal cells colourless. Distribution of hair types as in *C. ruandana* and *C. tomentosicollis*; apical margin of corium with a narrow band of silvery hairs; junction between areas of pale and dark pubescence of pronotum (Fig. 148) strongly M-shaped, with a tuft of erect, brown hairs entirely surrounded by pale, tomentose hairs between the anterior corners of the 'M'.



Figs 148–153 *Clavigralla oxonis*. (148) pronotum, ♀ paratype, dorsal view; (149) spermatheca; (150) left lateral margins of abdominal sternites III–VII, ♂ holotype, ventral view; (151) left paramere of holotype, dorsal view; (152) conjunctiva and vesica of holotype, left lateral view; (153) second valvula of paratype, lateral view.

REMARKS. Distinguished from all other members of the genus by the very short pronotal posterolateral spines.

DISTRIBUTION. Known only from a small, hilly area of northern Zambia.

MATERIAL EXAMINED

Holotype ♂, Zambia: N. Lake Bangweolo, Luwingu, 4200 ft (1300 m), 9.vi.1908 (*S. A. Neave*) (UM, Oxford).

Paratypes. Zambia: 2 ♀, Abercorn, 15.xii.1943 and 4.iv.1944 (*H. J. Brédo*) (IRSNB, Brussels).

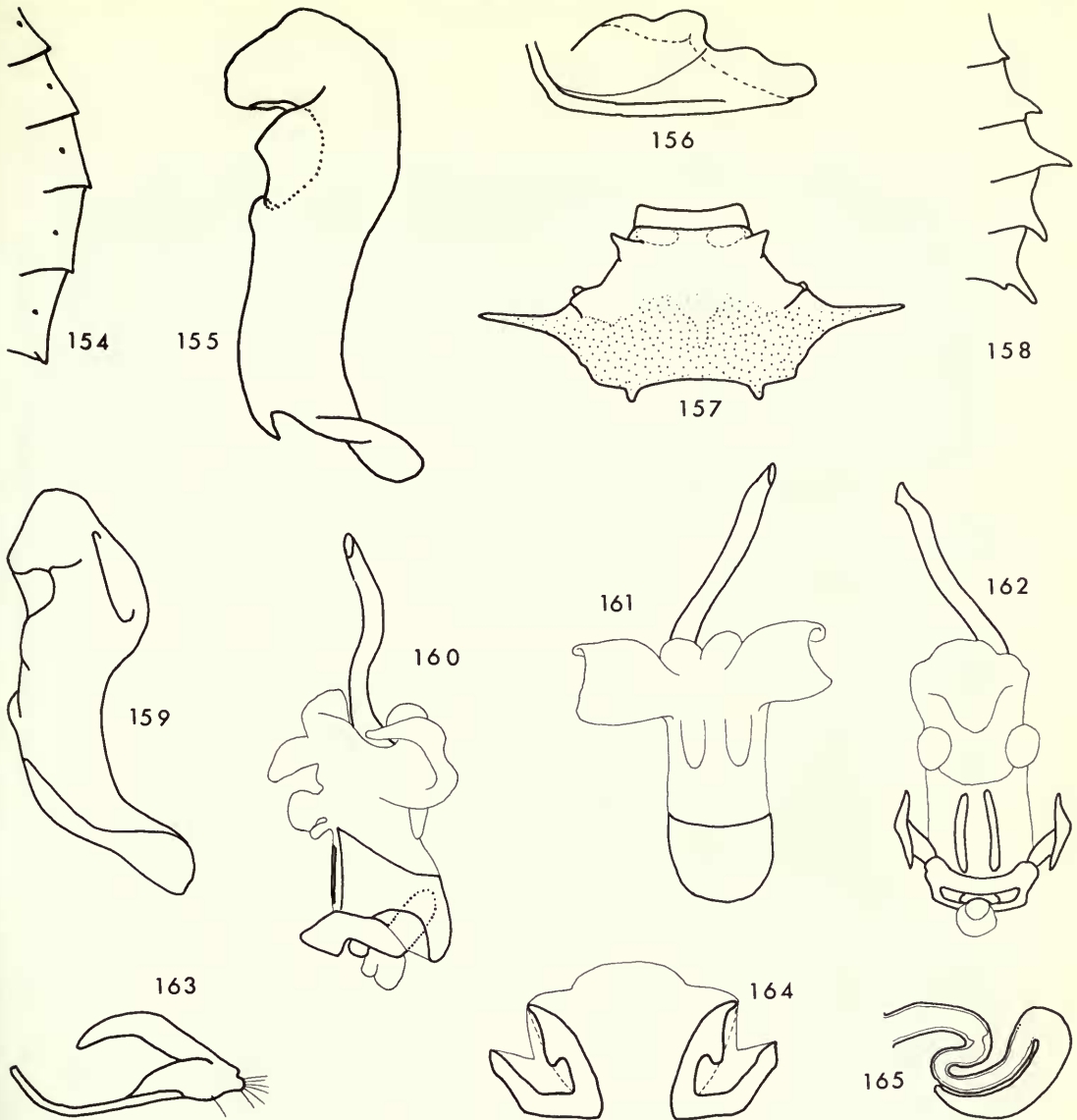
The *spiniscutis*-subgroup

Tongue of male genital capsule entire; pronotal disc with a pair of large, blunt, sublateral tubercles; membrane of hemelytron with a row of discrete, brown or piceous spots between bases of longitudinal veins, sometimes additionally blotched brown or piceous.

Clavigralla bovilla sp. n.

(Figs 154–156)

Length: ♂, 8.3 mm ($n = 1$); ♀, 8.4–8.8 mm, mean 8.6 mm ($n = 3$). Similar in build to *C. tomentosicollis*; resembles *C. ruandana* in the elongate head and posteriorly directed pronotal posterolateral spines.



Figs 154–165 *Clavigralla* species. (154) *bovilla*, left lateral margin of ♂ abdominal sternites III–VII, ventral view; (155) same, left paramere, dorsal view; (156) same, second valvula, lateral view; (157) *pusilla*, ♂ pronotum, dorsal view; (158) same, left lateral margin of ♂ abdominal sternites III–VII, ventral view; (159) same, left paramere, dorsal view; (160) same, aedeagus, left lateral view; (161) same, aedeagus, ventral view; (162) same, aedeagus, dorsal view; (163) same, second valvula, lateral view; (164) same, sclerites of dorsal wall of gynatrium, dorsal view; (165) same, spermatheca.

Length of antennal segment I divided by width of head including eyes in male 0.96 ($n = 1$), in female 0.90–0.94, mean 0.92 ($n = 3$). Ratio of lengths of antennal segments I : II : III : IV in male as 1.00 : 0.91 : 0.69 : 1.13, in female about 1.00 : 0.85 : 0.70 : 1.06. Length of basal segment of rostrum divided by width of head including eyes in both sexes 0.86–0.90, mean 0.88 ($n = 4$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.94 : 0.60 : 0.87.

Pronotum similar in shape to that of *C. ruandana* (cf. Fig. 138), with the posterolateral spines directed slightly posteriorly; width across apices of spines divided by width of head including eyes in both sexes

2.57–2.60, mean 2.59 ($n = 4$). Corium with apex slightly produced, at rest reaching to level of base of abdominal laterotergite VI. Posterior tibia with gentle curvature near base, its length divided by length of posterior femur 0.71–0.75, mean 0.73 ($n = 5$).

Abdominal sternites III–VII (Fig. 154) with posterolateral angles acute, slightly prominent. Male genital capsule with lip evenly rounded, not emarginate, tongue rounded as in *C. ruandana*. Paramere (Fig. 155) with blade broad, thick, apex bluntly hooked, tooth at middle of blade well developed. Conjunctiva could not be fully expanded in only specimen available. Female with sclerites of wall of gynatrium similar to those of *C. ruandana*; spermatheca like that of *C. tomentosicollis* but bulb narrower; second valvula of ovipositor (Fig. 156) unevenly narrowed towards apex.

Colour and pubescence generally as in *C. ruandana* but piceous markings absent from antennal segment I and absent or almost absent from sides of abdominal sternites; laterotergites marked with stramineous and rufous brown, not piceous; junction between pale and dark areas of pubescence on pronotum slightly undulating, with four evenly spaced tufts of pale hairs at junction, without any pale hairs in midline of posterior lobe, a tuft of slightly darker hairs present behind each large sublateral tubercle of disc, about equidistant from tubercle and from junction of pale and dark areas; no line of silvery or golden hairs present along apical margin of corium or clavus; membrane of hemelytron colourless with a row of piceous spots between longitudinal veins just distal to basal cells and parallel with apical margin of corium.

REMARKS. Differs from the other species with long heads (*ruandana*-subgroup) in the possession of discrete piceous spots in the forewing membrane, rather than an even suffusion of pigment. The shape of the second valvula and paramere are characteristic. During dissection of the abdomen of a female paratype a single, very small, hymenopterous larva was found in the haemocoel. It was presumably a first instar, being slender, tailed and provided with a broad head bearing large mandibles. It is possibly a euphorine braconid.

DISTRIBUTION. Known only from the type-locality in the hills of N. Zambia.

MATERIAL EXAMINED

Holotype ♂, Zambia: Abercorn, 15.xii.1943 (*H. J. Brédo*) (IRSNB, Brussels).

Paratypes. Zambia: 4 ♀, Abercorn, x.1943, xi.1943, 15.xii.1943, 4.iv.1944 (*Brédo*) (IRSNB, Brussels).

Clavigralla pusilla sp. n.

(Figs 157–165)

Length: ♂, 6.5–7.0 mm, mean 6.7 mm ($n = 7$); ♀, 6.7–7.3 mm, mean 7.0 mm ($n = 3$). A small, rather slender species.

Antennifers almost parallel, juga slightly tumid. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.82 : 0.72 : 0.98, in female about 1.00 : 0.88 : 0.75 : 0.95; length of segment I divided by width of head including eyes in male 1.28–1.41, mean 1.32 ($n = 7$), in female 1.22–1.26, mean 1.24 ($n = 3$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.94 : 0.52 : 0.84; length of segment I divided by width of head including eyes 0.57–0.64, mean 0.62 ($n = 5$).

Pronotum (Fig. 157) strongly declivent, centre of posterior lobe with a short, longitudinal ridge intersecting a similar transverse one; spines of posterolateral angles long, laterally directed, straight or gently upcurved; posterolateral angles just anterior to base of each spine with a pair of short, stout spines; paired, sublateral spines of disc very prominent; width across apices of posterolateral spines divided by width of head including eyes in male 2.50–3.07, mean 2.77 ($n = 4$), in female 2.40–2.73, mean 2.57 ($n = 3$). Scutellum convex, midline slightly depressed, apex slightly produced. Corium narrow, its apex slightly produced, at rest reaching suture between abdominal laterotergites V and VI. Posterior tibia gently curved near base, its length divided by length of posterior femur 0.65–0.70, mean 0.68 ($n = 5$).

Abdominal sternites III–VII with posterolateral angles produced into strong spines (Fig. 158). Male genital capsule with lip rounded, tongue entire and narrowly triangular. Paramere (Fig. 159) stout, with shallow depression on dorsolateral face, tooth at middle of blade projecting dorsally. Conjunctiva (Figs 160–162) with all lobes membranous, dorsomedian lobe low, its lateral angles projecting almost independently as small globular lobes slightly distal to main, transverse part of lobe; intermediate dorsal lobe large, conical, overhanging dorsomedian lobe; distal dorsomedian lobe poorly developed; distal dorsolateral lobes obsolete; apical ventral, distal ventrolateral and ventral lobes well developed; vesica large in comparison with size of conjunctiva. Female with second valvula (Fig. 163) bearing a short, apical process; sclerites of dorsal wall of gynatrium (Fig. 164) with short 'barb' on longitudinal arms; spermatheca (Fig. 165) with bulb short, duct short and simply looped.

Head, legs and antennae obsolete granulate, granulation more distinct on apices of femora and tibiae, pronotum anteriorly granulate, posteriorly punctate, pleura punctate-granulate, thoracic sterna and abdominal sterna and laterotergites minutely rough, clavus with three rows of punctures, corium in basal half with a few granules on veins and a few punctures between veins, apically unsculptured. Head and antennae with short, suberect, colourless pubescence, head and antennal segment I also with short, decumbent, silvery pubescence; pronotum anteriorly, on disc and along lateral and posterolateral margins with sparse, moderately long, erect, white pubescence, collar and declivent area also with rather dense, white, tomentose pubescence, posterior lobe with moderately long, decumbent, silvery hairs mixed with dense, suberect to decumbent, brown hairs, a small tuft of brown hairs present at middle of junction between areas of dark and pale pubescence; scutellum with long, dense, tomentose to suberect, silvery hairs, tinged more or less heavily with brown on disc; thoracic pleura and sterna with rather dense, white, decumbent, somewhat tomentose pubescence, pleura also with long, suberect, white pubescence; legs with rather short, suberect, white pubescence, femora also with short, semidecumbent to decumbent, white pubescence; clavus and corium with short, crisped, semidecumbent to decumbent, white pubescence; abdominal sterna with dense, decumbent to slightly tomentose, white pubescence, interspersed with long, erect, colourless hairs; laterotergites with white, decumbent pubescence. Colour generally as in *C. tomentosicollis* but antennae pale to mid-brown throughout and membrane colourless except for a row of piceous spots between bases of longitudinal veins parallel to apical margin of corium and piceous marks on two veins where they enter membrane from corium.

Ovarian egg (4 ex. seen) ovate, flattened dorsally, with chorion minutely reticulate; aeromicropyles separated into two groups as follows: 2 contiguous ones ventral to eclosion suture and 3 or 4 contiguous in a transverse row dorsal to the suture.

REMARKS. Differs from the only other Malagasy species of the *tomentosicollis*-group in the characters of the pigmentation of the membrane and the shape of the tongue of the male genital capsule, as well as the smaller size, more slender build and less strongly curved posterior tibia. Superficially similar to the African species *C. strabo* and *C. pabo* but body more slender and paramere stouter.

DISTRIBUTION. Southern Madagascar.

MATERIAL EXAMINED

Holotype ♂, Madagascar: Tulear Province, Betioky, 275 m, 15.iii.1968 (*K. M. G. & P. D.*) (BMNH, London).

Paratypes. Madagascar: 2 ♂, 2 ♀, same data as holotype (BMNH, London); 1 ♂, Région Sud de l'Île, Bekily, vi.1936 (*A. Seyrig*); 1 ♂, Région du Sud, Andrahomana, vii.1901 (*Ch Alluaud*); 1 ♂, Région du Sud, Androy, between Antanimora and Ifotaka, xi.1901 (*Alluaud*); 1 ♂, Région du Sud, Androy, Ambovombé, xi.1901 (*Alluaud*); 1 ♀, Belumbe, 1900 (*Fairmaire*) (MNHN, Paris).

Clavigralla strabo sp. n.

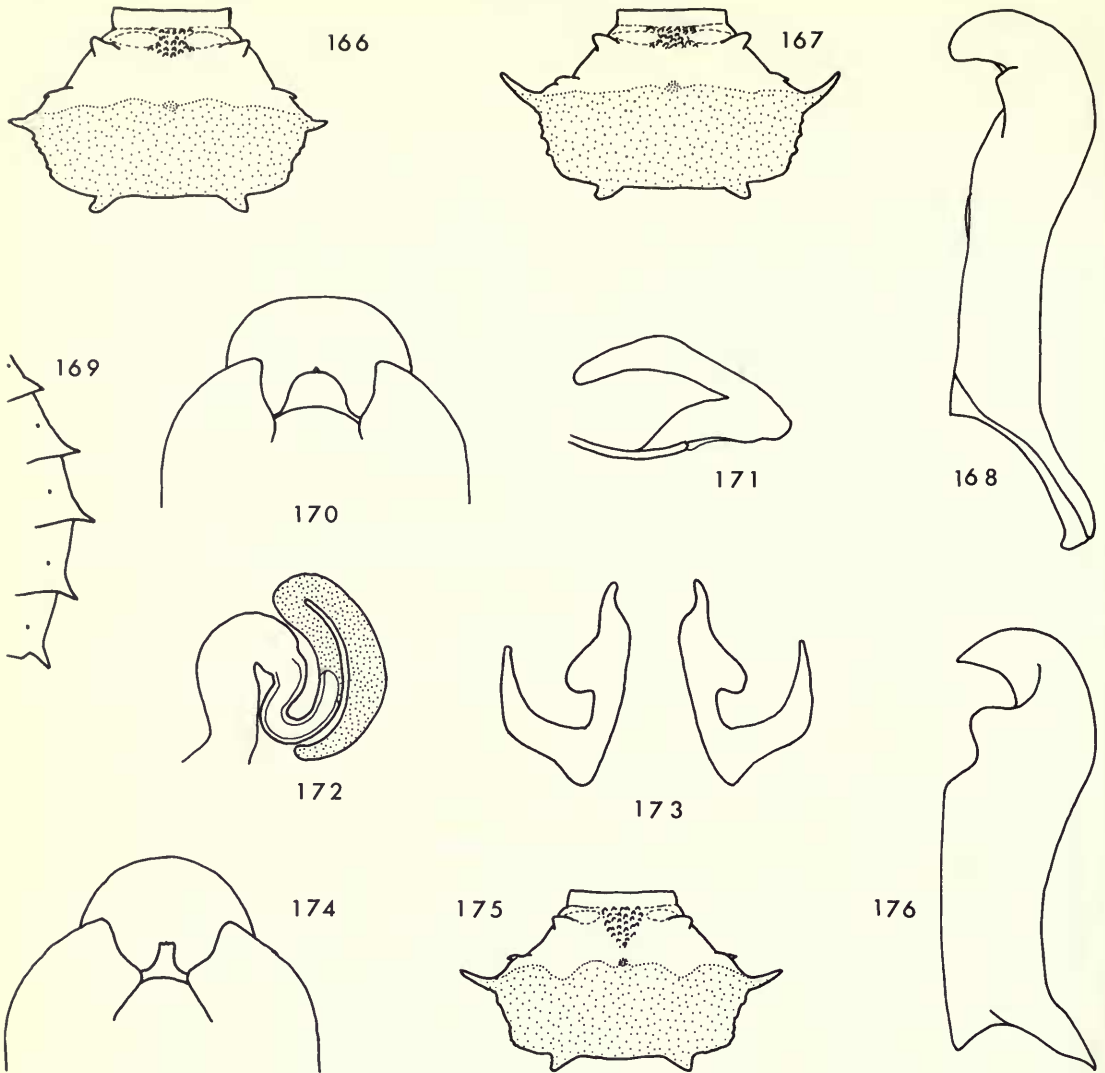
(Figs 166–173)

Length: ♂, 7.0–7.3 mm, mean 7.1 mm ($n = 3$); ♀, 6.6–8.3 mm, mean 7.7 mm ($n = 9$). Similar in size and build to *C. spiniscutis*.

Head short, antennifers slightly divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.77 : 0.65 : 0.89, in female about 1.00 : 0.81 : 0.69 : 0.87. Antennal segment I moderately robust and bearing long, erect hairs, length of segment divided by width of head including eyes in male 1.06–1.23, mean 1.14 ($n = 3$), in female 1.05–1.15, mean 1.09 ($n = 9$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.89 : 0.62 : 0.92; length of basal segment divided by width of head including eyes 0.56–0.66, mean 0.59 ($n = 10$).

Pronotum (Figs 166, 167) with posterolateral angles moderately prominent, usually with a distinct spine or tubercle laterally on anterior part of each prominence; posterolateral spines slender, gently up-curved and also curved slightly anteriorly, variable in length (extreme variants figured in Figs 166, 167); width across apices of posterolateral spines divided by width of head including eyes in male 2.19–2.27, mean 2.22 ($n = 3$), in female 2.13–2.50, mean 2.27 ($n = 7$). Corium with apex not produced, at rest with apex reaching posteriorly to level of apical one-third of laterotergite V, rarely as far as suture between laterotergites V and VI. Posterior tibia straight, its length divided by length of posterior femur 0.65–0.70, mean 0.68 ($n = 11$).

Abdomen with posterolateral angles of sternites III–VII produced into rather stout but very acute spines (Fig. 169); tergum IX of female slightly deflexed apically. Male genital capsule (Fig. 170) with lip broad,



Figs 166-176 *Clavigralla* species. (166) *strabo*, ♂ pronotum, dorsal view, from Rustenburg; (167) same, ♂ pronotum, dorsal view, Louis Trichardt; (168) same, left paramere, dorsal view; (169) same, left lateral margin of abdominal sternites III-VII, ventral view; (170) same, apical half of ♂ genital capsule, dorsal view; (171) same, second valvula, lateral view; (172) same, spermatheca; (173) same, sclerites of dorsal wall of gynatrium, dorsal view; (174) *pabo*, apical half of ♂ genital capsule, dorsal view; (175) same, ♂ pronotum, dorsal view; (176) same, left paramere, dorsal view.

prominent, slightly truncate, tongue rounded. Paramere (Fig. 168) with apex strongly incurved, blunt, tooth at middle of blade prominent, well developed. Ejaculatory reservoir complex with wings, straps and vesica moderately long. Conjunctiva entirely membranous; dorsomedian lobe low, with a pair of short, finger-like lobes arising from its base posterolaterally; intermediate dorsal lobe large, higher than finger-like lobes; distal dorsomedian and distal dorsolateral lobes small; apical ventral and distal ventrolateral lobes normally developed; small, paired, ventral lobes present. Female with apex of second valvula of ovipositor (Fig. 171) broadly prominent; spermatheca (Fig. 172) with bulb narrow, duct about three times as long as bulb, not convoluted, with broad and narrow regions about equal in length; sclerites of dorsal wall of gynatrium (Fig. 173) with broad expansions on median arms.

Head, thoracic pleura and sterna, declivent part of pronotum, scutellum and abdominal sterna with rather dense, decumbent, silvery white, tomentose pubescence; head dorsally also with very long, sparse,

erect pubescence, laterally and ventrally with shorter, suberect pubescence. Antennal segment I bearing short, rather sparse, decumbent, silvery pubescence and long, erect, colourless hairs much longer than diameter of segment; segments II and III with rather long, suberect hairs the longest of which are longer than width of segments; pubescence of rostrum mainly consisting of rather short, suberect hairs and, on segments I and II, some decumbent, silvery hairs; propleura and declivent part of pronotum also with long, erect hairs in addition to the tomentose indumentum; horizontal part of pronotum with golden-brown to dark brown, decumbent to erect pubescence, mostly of short to moderately long hairs, in the posterior part mostly decumbent with a few pale brown, erect hairs intermixed; centre of junction between anterior, pale and posterior, dark areas of pronotal pubescence with a small brush of erect, brown hairs; disc and sides of scutellum with long pubescence, white except for anterior part of disc where hairs are brown; thoracic and abdominal sterna also with moderately long, suberect, silvery hairs; clavus and corium with short, crisped, silvery to golden pubescence with an admixture of short, slightly tomentose hairs of the same colour along costal margin of corium and apical margins of clavus and corium; abdominal laterotergites with a mixture of these two types of pubescence; legs with long, erect, colourless to pale brown hairs much longer than width of tibiae and shorter, suberect hairs, femora also with decumbent, silvery hairs. Head, thoracic pleura and abdominal sterna pale brown with obscure, darker brown to piceous markings; thoracic sterna piceous; pronotum pale brown anteriorly, chestnut-brown in posterior, horizontal part, tubercles in anterior midline piceous, this group of tubercles extending laterally to embrace calli for one-third to one-half of their width but not extending posteriorly beyond level of the large, sublateral tubercles, sublateral tubercles and posterolateral spines of pronotum piceous; scutellum pale brown, broadly piceous at base; clavus and corium stramineous, veins anteriorly with some granules piceous, apical one-third of corium heavily marked with dark or reddish brown mottling; membrane milky-hyaline, bases of two veins at junction with corium and 1-5 discrete spots between longitudinal veins close to basal cells dark brown or piceous; femora pale yellowish brown in basal one-quarter to one-third, otherwise dark reddish brown with a few paler spots, pale area at base of femur sometimes with extensive darker markings; tibiae and tarsi yellowish brown to stramineous, tibiae with basal and apical annuli reddish brown; antennae pale yellowish brown, apices of segments I-III and whole of IV sometimes infusate; spines at posterolateral angles of abdominal sternites piceous; abdominal laterotergites dark brown, III-V each with a narrow, transverse band near anterior margin stramineous, VI with a broader stramineous band in the same position, lateral exposed areas of tergite VII coloured as laterotergites VI.

Ovarian egg with granular, polygonal sculpture on chorion and with 3-4 aeromicropyles close together in a straight line on rim where flat, dorsal and convex, ventral sides of egg meet.

REMARKS. This species closely resembles *C. spiniscutis* in general appearance but differs from it in the pubescence of the scutellum, which is not organized into spine-like tufts, the coloration of the hemelytral membrane which never has irregular piceous patches but only a few discrete spots, the straight posterior femur, the much stronger dorsal tooth of the paramere and other details of the male genitalia.

DISTRIBUTION. All specimens seen were taken at medium altitudes in southern Africa between latitudes 17° S and 30° S.

MATERIAL EXAMINED

Holotype ♂, **Botswana:** 1 ♂, Bakgatla, Sebele, in grass, 8.viii.1968 (*R. E. Roome*) (BMNH, London).

Paratypes. **Botswana:** 1 ♀, Ghanzi, 13.ix.1926 (*J. Maurice*) (BMNH, London); 1 ♀, Samengegei, Kaukau Kungv., vi.1951 (*C. Koch*) (TM, Pretoria). **Rhodesia:** 1 ♀, Sawmills, 1.iv.1923 (BMNH, London). **South West Africa:** 1 ♀, Abachaus, Otjiwarongo District, iii.1950 (*G. Hobohm*); 1 ♀, Ovamboland, Oshikango, vii.1948 (TM, Pretoria). **South Africa:** 1 ♂, 1 ♀, Rustenburg, xii.1961 (*A. L. Capener*); 1 ♂, 1 ♀, Louis Trichardt, 6.ii.1941 (*Capener*) (TM, Pretoria); 1 ♀, Natal, Durban (*J. P. Cregoe*); 1 ♀, Transvaal, Zoutpansberg (*H. Junod*) (BMNH, London).

Clavigralla pabo sp. n.

(Figs 174-176)

Length: ♂, 6.4-7.1 mm, mean 6.7 mm (n = 3). Female unknown. Very similar to *C. strabo* and *C. spiniscutis* in general appearance.

Head short, antennifers distinctly divergent, especially at the base. Ratio of lengths of antennal segments I : II : III : IV about 1.00 : 0.82 : 0.70 : 0.97; segment I slender, bearing short, suberect hairs much shorter than diameter of segment; length of segment I divided by width of head including eyes 1.17-1.22, mean 1.20 (n = 3). Ratio of lengths of rostral segments I : II : III : IV as 1.00 : 0.93 : 0.53 : 0.87 and

length of basal segment divided by width of head including eyes 0.60 in only specimen (from Natal) where rostrum is visible.

Pronotum (Fig. 175) with posterolateral spines long and slender, width across apices of spines divided by width of head including eyes 2.19–2.37 ($n = 2$, both from Mozambique). Posterior tibia distinctly arcuate basally, its length divided by length of posterior femur 0.70–0.72, mean 0.71 ($n = 3$).

Genital capsule (Fig. 174) with lip prominent, broadly rounded, tongue very narrow. Paramere (Fig. 176) with tooth at middle of blade very large, apex of blade strongly incurved, acutely pointed. Aedeagus as in *C. strabo*.

Coloration and distribution of pubescence as in *C. strabo* except that the length of the hairs, particularly the outstanding hairs of the appendages, is much less; longest hairs on antennal segments I–III suberect, shorter than diameter of segment II; longest hairs on legs suberect to erect, shorter than or just equal to diameter of tibiae. Hemelytral membrane with rather extensive pale brown markings in addition to a row of piceous spots between veins close to basal cells. Group of piceous tubercles in anterior midline of pronotum extending posteriorly well behind level of sublateral tubercles, not deeply embracing calli.

REMARKS. The unique shape of the tongue of the genital capsule distinguishes this species from all its relatives. Superficially it might be confused with *C. strabo*, from which it differs in the much shorter pubescence of the appendages and the shape of the patch of piceous granules in the anterior midline of the pronotum, or with *C. spiniscutis* from which it differs in the much paler pigmented patches of the hemelytral membrane and in lacking the specialized arrangement of pubescence on the scutellum of that species.

DISTRIBUTION. Known only from the Delagoa Bay – Lake St Lucia area on the eastern coast of southern Africa.

MATERIAL EXAMINED

Holotype ♂, **Mozambique:** I. de Inhaca, 20–22.ii.1971 (*F. Simoes*) (Duarte coll.).

Paratypes. **Mozambique:** 1 ♂, I. de Inhaca, 27–30.iii.1971 (*F. Madureira*) (Duarte coll.). **South Africa:** 1 ♂, Natal, Lake St Lucia, Charters Creek, 12.xi.1967 (*J. A. & S. Slater, T. Schuh*) (Slater coll.).

Clavigralla spiniscutis (Bergróth) comb. n.

(Figs 177–184)

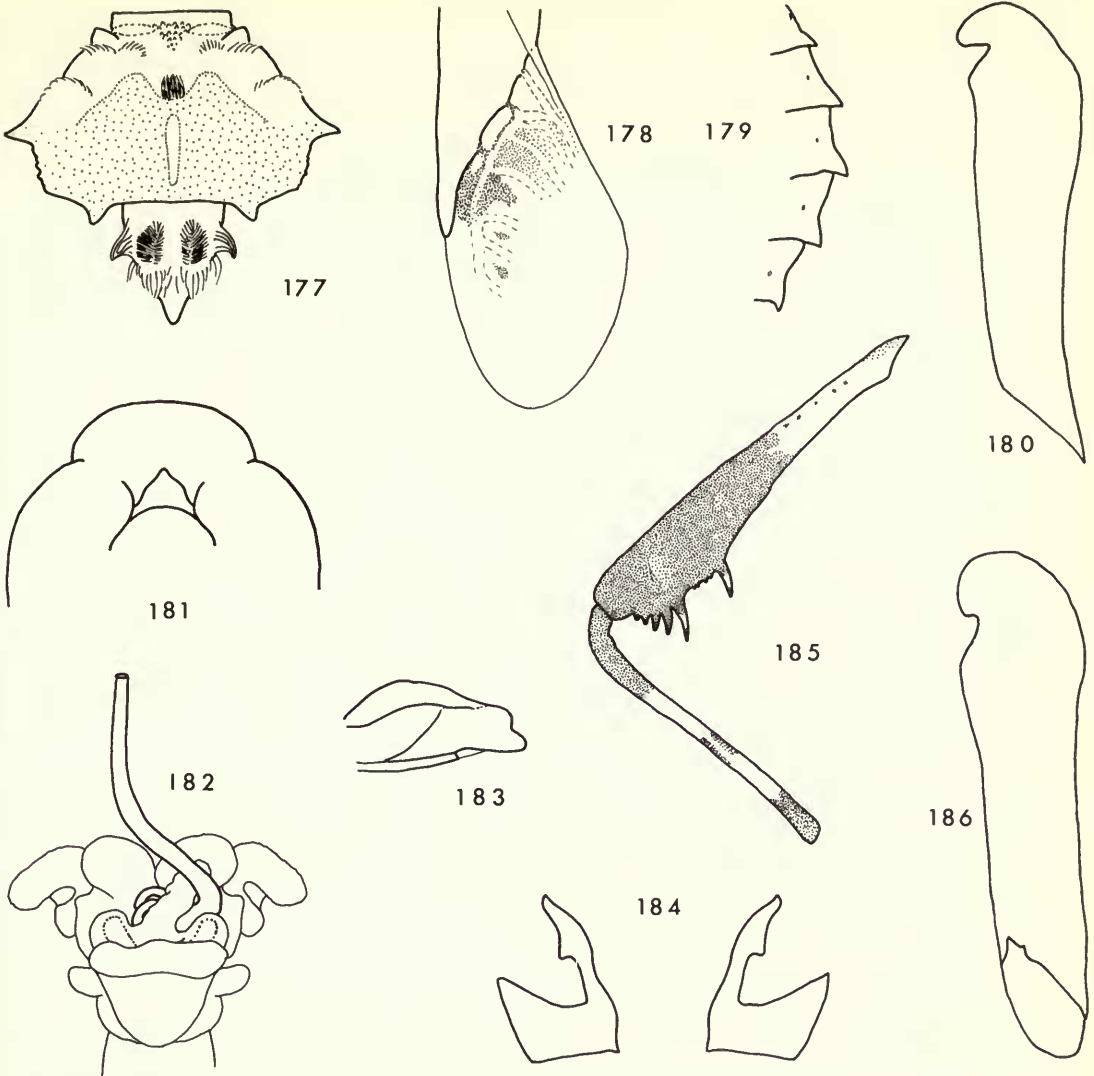
Acanthomia spiniscutis Bergróth, 1913 : 328–329. Type ♂, CENTRAL AFRICAN REPUBLIC [not seen; perhaps present but unrecognized at ZMU, Helsinki].

Length: ♂, 6.9–7.8 mm, mean 7.3 mm ($n = 10$); ♀, 6.8–8.4 mm, mean 7.6 mm ($n = 7$). A small, generally dark coloured species of rather stout build.

Head short, antennifers very slightly divergent. Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.81 : 0.76 : 0.99, in female about 1.00 : 0.79 : 0.69 : 0.92. Antennal segment I rather stout, gradually and uniformly expanding towards apex, its length divided by width of head including eyes in male 0.96–1.15, mean 1.04 ($n = 9$), in female 0.96–1.16, mean 1.05 ($n = 7$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.86 : 0.58 : 0.90; length of segment I divided by width of head including eyes 0.56–0.71, mean 0.61 ($n = 17$).

Pronotum (Fig. 177) strongly declivent anteriorly, posterolateral angles strongly inflated but not produced laterally, posterolateral spines short, triangular; width of pronotum across apices of spines divided by width of head including eyes in male 2.11–2.41, mean 2.28 ($n = 9$), in female 2.13–2.40, mean 2.22 ($n = 7$). Scutellum convex, with a pair of callosities on disc, its shape usually obscured by dense tufts of pubescence (Fig. 177). Corium with apex weakly produced, at rest reaching posteriorly to level of suture between laterotergites V and VI. Posterior femur with the 2 major subapical spines almost equal in length, with 4–5 minor spines between them and a terminal series of four spines; posterior tibia short, strongly arcuate at base, its length divided by that of posterior femur 0.63–0.70, mean 0.66 ($n = 16$).

Abdominal sterna III–VII with posterolateral angles (Fig. 179) abruptly prominent as short, triangular teeth. Male genital capsule (Fig. 181) short, lip strongly and broadly projecting, tongue mucronate. Paramere (Fig. 180) strongly expanded towards apex, especially in vertical plane, tooth at middle of dorsal surface of blade very broad, apex of blade narrowly hooked but not acute. Conjunctiva (Fig. 182) rather similar to that of *C. curvipes*, with dorsomedian lobe broad and bearing small subsidiary lobes at its posterolateral basal angles; intermediate dorsal lobe large, conical; distal dorsomedian and distal dorsolateral lobes poorly developed but distinct, a finger-like median lobe arising from posterior face of conjunctiva above base of vesica; apical ventral lobes large, less rough on surface than those of *C.*



Figs 177-186 *Clavigralla* species. (177) *spiniscutis*, pronotum and scutellum, ♀, dorsal view; (178) same, ♀ left hemelytral membrane and apex of corium, dorsal view; (179) same, left lateral margin of ♀ abdominal sternites III-VII, ventral view; (180) same, left paramere, dorsal view; (181) same, apical half of ♂ genital capsule, dorsal view; (182) same, conjunctiva and vesica, dorsal view; (183) same, second valvula, lateral view; (184) same, sclerites of dorsal wall of gynatrium, dorsal view; (185) *marmorata* holotype ♂, right posterior femur and tibia, anterior view; (186) same, left paramere of holotype, dorsal view.

curvipes; distal ventrolateral lobes large; ventral lobes absent. Female with second valvula of ovipositor (Fig. 183) narrowly produced at apex. Spermatheca as in *C. curvipes*. Sclerites of dorsal wall of gynatrium (Fig. 184) with anterior arms very broad in the oblique transverse/frontal plane, median longitudinal arms each with a small external tooth.

Pubescence of antennae of short, suberect, pale hairs shorter than width of segment II, segment I also with short, decumbent, silvery hairs. Head with white, decumbent pubescence, dorsally very dense and obscuring ground colour, also with colourless, suberect, short hairs throughout and with long, erect, colourless hairs along dorsal midline; rostrum with short, suberect, colourless hairs and segments I and II also with short, decumbent, silvery hairs. Thoracic sterna and pleura and abdominal sterna with moderately long, tomentose, white pubescence interspersed with long or medium length, suberect, colourless

hairs; declivent area of pronotum (Fig. 177) with dense, tomentose, decumbent, white pubescence interspersed with long, sparse, erect, usually brown hairs; a short, transverse ridge of pale, tomentose pubescence present posterior to each sublateral tubercle of disc; posterior horizontal lobe with decumbent, golden-brown pubescence; junction between the two areas of pronotal pubescence marked by a median tuft of moderately long, dark brown hairs flanked by two triangular patches of short, erect, dark brown hairs, median tuft largely or entirely surrounded by white, tomentose pubescence which continues in a band along midline of pronotum posterior to tuft. Scutellum (Fig. 177) in fresh, unabraded specimens with two tufts of dark brown hairs on disc, flanked by long, white hairs which are organized into two thorn-shaped lateral brushes and an irregularly rounded or bifid posterior fringe. Clavus, corium and abdominal laterotergites with short, crisped to semidecumbent, silvery and golden-brown pubescence. Legs with suberect to erect, colourless pubescence the longest hairs of which are about as long as diameter of tibiae; femora also with decumbent, silvery hairs.

Head pale brown, ventral surface and some lateral markings and ocellar tubercles piceous. Antennae stramineous, segment I with external basal streak and broad, apical annulus brown, segments II and III each usually with an apical or subapical annulus brown, segment IV pale brown. Rostrum brown, segment IV largely piceous. Thorax and abdomen mainly brown, thoracic sterna, larger granules of thoracic pleura, median and lateral markings on abdominal sterna, pronotal midline and sublateral tubercles, pronotal posterolateral spines, integument beneath the 3 patches of erect, brown hairs on pronotum and base of scutellum piceous. Abdominal laterotergites III-V red-brown, VI and corresponding area of tergum VII stramineous with narrow basal and apical bands red-brown. Femora basally stramineous, apically confusedly mottled piceous and various shades of brown; tibiae stramineous with basal, apical and medial annuli brown; tarsi pale brown. Hemelytra with clavus and corium stramineous to pale brown, punctures pale brown, corium anteriorly with some large granules on basal parts of major veins piceous, apical one-third of corium confusedly mottled piceous and various shades of brown; membrane (Fig. 178) largely colourless with more or less discrete piceous markings basally which vary in extent, but always with some distinct spots between longitudinal veins near basal cells.

REMARKS. The small size and arcuate posterior tibiae could lead to confusion of this species with *C. curvipes*, from which it may always be distinguished by the presence of distinct, piceous markings on the hemelytral membrane which in *C. curvipes* is evenly suffused pale fuscous. The shape of the pronotum and the pattern of pubescence on the scutellum also serve to distinguish the two species. Examination of the form of the tongue of the genital capsule will confirm the identity of male specimens. Specimens from eastern and southern Africa differ from those from West Africa in having a slightly narrower head and slightly longer tibiae. In West African specimens the means of pronotum width, first antennal segment length and first rostral segment length divided by head width were found to be 2.24, 1.01 and 0.58 respectively, compared with values for eastern and southern specimens of 2.26, 1.09 and 0.64. The mean value of posterior tibia length divided by posterior femur length was 0.66 for West African specimens and 0.68 for eastern and southern specimens.

In his original description of this species, Bergróth (1913 : 328-329) apparently mistook the tufts or brushes of hairs on the scutellum for solid spines. This cannot be verified as the type-specimen cannot be located at present. According to Grant & Štys (1970 : 113) many of Bergróth's types have been recognized among the general collection of the ZMU, Helsinki, so it is possible that type-material of *spiniscutis* may one day come to light. For this reason and because the species is readily recognizable from the original description it seems inappropriate to designate a neotype.

DISTRIBUTION. A crescent-shaped area connecting Senegal, Kenya, Malawi, Botswana and Angola. No specimens attributable to this species were found in the extensive collections of Hemiptera from Zaire held by the IRSNB, Brussels and the MRAC, Tervuren.

MATERIAL EXAMINED

Senegal: 1 ♂, Nioro, 12.x.1943, on rice (*Oryza sativa*) (*J. Risbec*) (BMNH, London). **Ivory Coast:** 1 ♂, Lamto, 11.xi.1965 (*Mme D. Gillon*) (BMNH, London). **Ghana:** 1 ♂, Tafo, 8.i.1967 (*R. Kumar*); 1 ♂, 2 ♀, Kpandu, 2.xi.1967 (*Kumar*) (UG, Legon). **Nigeria:** 2 ♂, 1 ♀, Samaru, 8.ix.1954, 12.i.1955, 12.ii.1956, at grass roots and on cotton (*Gossypium*) (*M. G. Ensley*) (BMNH, London). **Kenya:** 1 ♂, Migori Valley, S. Kavirondo, 1300 m, 2-4.v.1911 (*S. A. Neave*); 1 ♂, 1 ♀, Kisumu, 1145 m, xi.1920 (*A. F. J. Gedye*); 1 ♀, Nairobi, iv.1936 (*Gedye*); 1 ♀, N.F.D., Wajir, 25.i.1955 (*I. Lansbury*) (BMNH, London). **Tanzania:** 1 ♂,

Meru, vii.1943 (*Van Someren*); 2 ♂, no detailed data (*W. H. Potts*) (BMNH, London). **Malawi:** 1 ♀, Mlanje, 5.ix.1913, 700 m (*S. A. Neave*) (BMNH, London). **Angola:** 1 ♀, Luimbale, Mt Moco, 1800–1900 m, iii.1934 (*K. Jordan*) (BMNH, London). **Botswana:** 1 ♂, Moremi Reserve, 19° 23' S, 23° 33' E, 19.iv.1972 (*BMNH Southern Africa Expedition*) (BMNH, London).

Clavigralla marmorata sp. n.

(Figs 185, 186)

Length: ♂, 7.0–7.7 mm (n = 2). Female unknown. Resembles *C. spiniscutis* in colour and pubescence but of a much more slender build, with longer appendages and non-arcuate posterior tibiae. The paratype lacks antennal segments III and IV.

Head rather short, antennifers slightly divergent; antennae with segment I very slightly thickened in its apical one-third, its length divided by width of head including eyes 1.34 in both specimens. Ratio of lengths of antennal segments I : II : III : IV as 1.00 : 0.87 or 0.83 : 0.78 : 0.98; segment III slightly longer than width of head, other segments distinctly longer. Rostrum at rest reaching to disc of metasternum, ratio of lengths of segments I : II : III : IV about 1.00 : 0.93 : 0.53 : 0.83; length of basal segment divided by width of head including eyes 0.64–0.69.

Pronotum rather similar to that of *C. spiniscutis* but posterior, horizontal lobe behind posterolateral angles much shorter; width across apices of posterolateral spines divided by width of head including eyes 2.13–2.23. Apex of corium at rest reaching to level of base of abdominal laterotergite VI. Posterior tibia (Fig. 185) almost straight, its length divided by that of posterior femur 0.76–0.77.

Abdominal sternites III–VII with posterolateral angles projecting as broad, rather short spines. Male genital capsule with lip rounded, prominent, tongue triangular. Paramere (Fig. 186) moderately broad, apex curved towards midline of body, very blunt. Conjunctiva as in *C. spiniscutis* except for the presence of a pair of small ventrolateral lobes at about the level of the dorsomedian lobe; finger-like lobe on posterior face of conjunctiva above base of vesica much stouter at its base than that of *C. spiniscutis*.

Colour and distribution of pubescence as in *C. spiniscutis* but pubescence everywhere sparser; pubescence of antennae very short; pattern of hairs on pronotum exactly as in *C. spiniscutis* and that of scutellum very similar but less compactly concentrated into tufts; colour pattern of hemelytral membrane as in *C. spiniscutis*; abdominal laterotergites III–V dark brown with narrow, pale brown, transverse band close to anterior border of each, VI with a much broader band occupying basal half except for very narrow dark brown anterior margin, corresponding area of tergite VII pale brown except for narrow, dark brown bands at anterior and posterior margins.

REMARKS. The small size, dark coloration, non-arcuate posterior tibiae and particularly the very long antennae distinguish this species from its relatives. The shape of the paramere indicates a close relationship with *C. spiniscutis*.

DISTRIBUTION. Known only from Rhodesia and Transvaal.

MATERIAL EXAMINED

Holotype ♂, **South Africa:** Transvaal, Wylies Poort, 3–8.ii.1941 (*A. L. Capener*) (TM, Pretoria).

Paratype. **Rhodesia:** 1 ♂, Salisbury, 1898 (BMNH, London).

The tomentoscillis-subgroup

Tongue of male genital capsule trifid; pronotal disc with a pair of large, blunt, sublateral tubercles; membrane of hemelytron suffused fairly evenly with brown pigment, only rarely with some indication of spotting between the veins close to the basal cells.

This is the only subgroup of the genus which contains species found in the Oriental region. The three Oriental species are *C. orientalis*, *C. gibbosa* (the type-species of the genus) and *C. scutellaris*, which is also found in Africa.

Clavigralla tomentoscillis Stål

(Figs 187, 188, 191–202)

Clavigralla tomentoscillis Stål, 1855 : 31. LECTOTYPE ♀, SOUTH AFRICA (NR, Stockholm), here designated (examined).

Clavigralla tomentoscillis Stål, 1865 : 107. [Emendation.]

Acanthomia tomentoscillis (Stål) Stål, 1873 : 82.

Length: ♂, 8.3–9.7 mm, mean 9.1 mm ($n = 32$); ♀, 9.3–11.5 mm, mean 10.6 mm ($n = 30$). Form robust, oblong, deep-bodied.

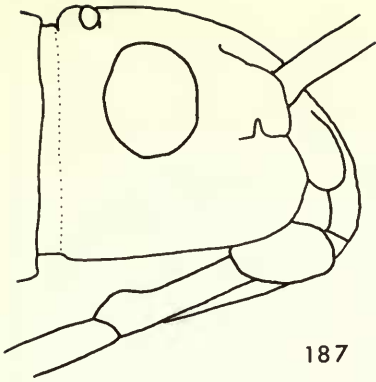
Head (Fig. 187) anteriorly declivent at an angle of about 45° to the vertical. Antennifers scarcely divergent, process at outer apical angle broad, deflexed. Bucculae occupying about one-third of length of ventral midline of head. Antennae with segment I slightly curved laterad and slightly thickened in its apical third, its length divided by width of head including eyes in male 1.17–1.39, mean 1.26 ($n = 30$), in female 1.10–1.32, mean 1.25 ($n = 30$). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.85 : 0.72 : 1.03, in female about 1.00 : 0.88 : 0.75 : 1.01. Basal segment of rostrum at rest (Fig. 187) with apex distinctly posterior to level of posterior margin of eye; length of basal segment divided by width of head including eyes in male 0.68–0.81, mean 0.73 ($n = 30$), in female 0.63–0.83, mean 0.76 ($n = 30$). Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 0.92 : 0.71 : 1.15, in female about 1.00 : 0.89 : 0.70 : 1.10.

Pronotum (Fig. 188) strongly declivent anteriorly, with a pair of large, blunt, sublateral tubercles; posterolateral angles bluntly projecting, each bearing a short, slender, laterally directed spine with slight anterior and upward curvature; width across apices of posterolateral spines divided by width of head including eyes in male 2.35–3.10, mean 2.70 ($n = 30$), in female 2.54–3.18, mean 2.87 ($n = 30$); pre-scutellar spines small, strongly divergent. Scutellum with disc very strongly convex. Metathoracic scent gland peritreme of the usual form for the species-group (Fig. 191). Apex of corium produced, at rest reaching posteriorly to level of about basal one-third of abdominal laterotergite VI. Anterior and intermediate femora each with a single small, subapical spine beneath, rarely with two; posterior femur (Fig. 192) with two major subapical spines beneath, the more distal about one and one-half times as long as the other, with about 5 very small spines or granules between them and a terminal series of 4 or 5 spines. Posterior tibia straight except for slight basal curvature (Fig. 192), its length divided by length of posterior femur in both sexes 0.68–0.88, mean 0.75 ($n = 60$).

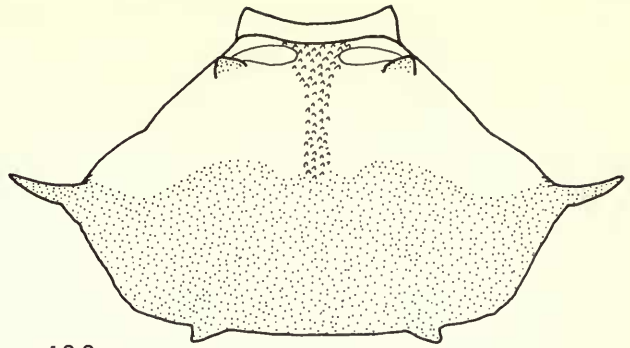
Abdominal sternites III–VII with posterior angles acute, slightly prominent (Fig. 193). Male genital capsule (Fig. 194) with lip filling posterior emargination, tongue trifid. Paramere (Fig. 198) with apex strongly incurved, acute, tooth at middle of blade strongly developed, blade scarcely broader than shaft. Conjunctiva (Figs 195–197) with dorsomedian lobe low, transverse, simple; distal dorsomedian lobe larger, transverse, with conical intermediate dorsal lobe arising from its anterior face and short, distal dorsolateral lobes arising at its lateral angles; posterior face of conjunctiva above base of vesica with a pair of T-shaped or capitate lobes slightly larger than distal dorsolateral lobes; apical ventral lobes about equal in size to these capitate lobes; distal ventrolateral lobes large, spreading, lightly sclerotized on their posterior faces; ventral lobes small, short and finger-like; no lobes, apart from distal ventrolaterals, sclerotized. Ejaculatory reservoir (Fig. 199) small, wings and straps long, sclerites protecting base of vesica small and closely associated with ejaculatory reservoir; vesica tightly coiled at base, moderately long. Female abdominal sternite VII cleft along rather less than half the length of its midline. Second valvula of ovipositor (Fig. 201) with small, rounded, apical prominence bearing about 10 stout bristles; ventral half of lateral surface with numerous, finer bristles. Spermatheca (Fig. 202) with duct short, not convoluted. Sclerites of dorsal wall of gynatrium (Fig. 200) V-shaped, anterior, spreading arms broad in slightly oblique vertical plane, median, longitudinal arms with half-hastate expansion in horizontal plane.

Head dorsally and laterally granulate, antennal segments I–III minutely granulate. Pronotum with declivent area, collar and lateral margins granulate, disc and posterior lobe granulate-punctate, with a few, very small tubercles. Scutellum granulate. Thoracic pleura granulate-punctate. Femora and abdominal laterotergites weakly granulate. Clavus seriatly punctate in three to four rows, corium weakly punctate, in basal half only; anterior veins in basal half with a few, coarse granules.

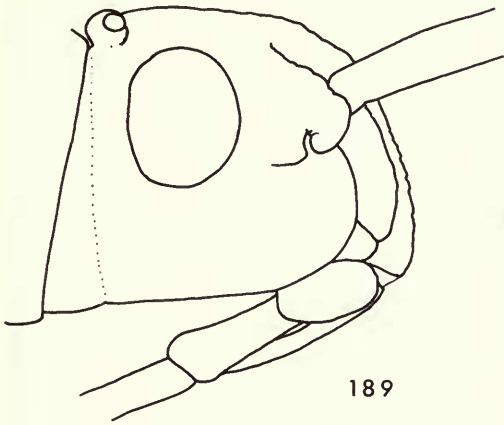
Head with short, decumbent, tomentose, silvery to golden pubescence throughout, interspersed with moderately long, suberect, colourless hairs and with a few, long, erect, colourless hairs along dorsal midline. Antennal segments I–IV with short, semidecumbent, colourless pubescence, I also with distinct, short, decumbent, silvery pubescence, traces of which are also present on II and III. Rostral segments I–IV with short, suberect, colourless pubescence, I and II also with decumbent, crisped, silvery pubescence. Pronotum (Fig. 188) in declivent part with dense pubescence composed of long, tomentose, silvery-white or slightly yellow hairs and long, erect, pale yellow to pale brown hairs, this area of pale pubescence completely divided into two halves by a median longitudinal band devoid of tomentose pubescence; posterior, horizontal lobe of pronotum with darker pubescence, the two areas of different coloured pubescence sharply demarcated, the junction between them following an undulating, transverse line between posterolateral angles of pronotum, two posterior projections of pale pubescence cause this line to undulate sharply in middle. Hairs of posterior lobe in band immediately adjacent to pale area short, erect, dark brown; remainder of this area with short, decumbent, crisped, golden-brown pubescence; posterior margin of pronotum fringed with long, erect, colourless hairs. Scutellum laterally and in posterior two-



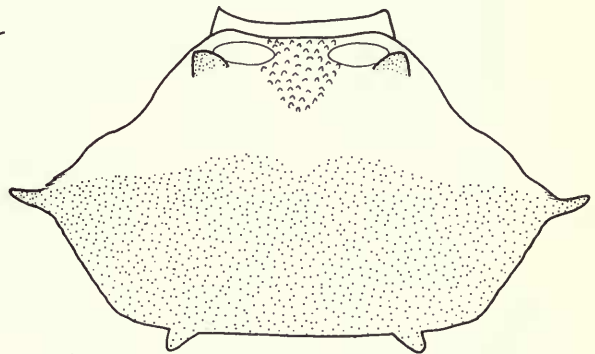
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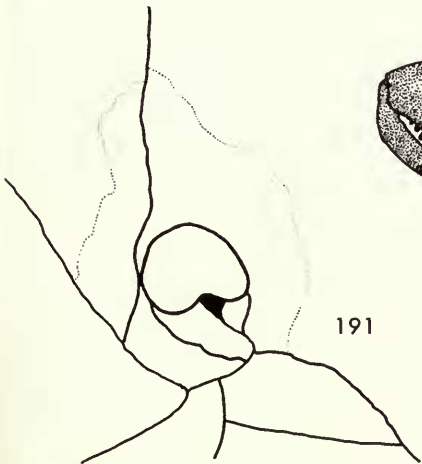
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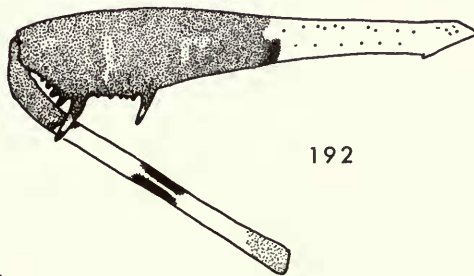
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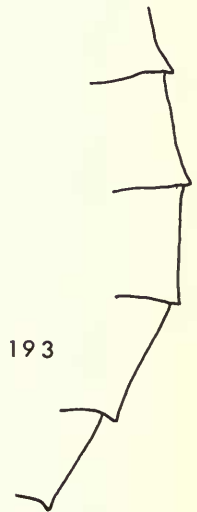
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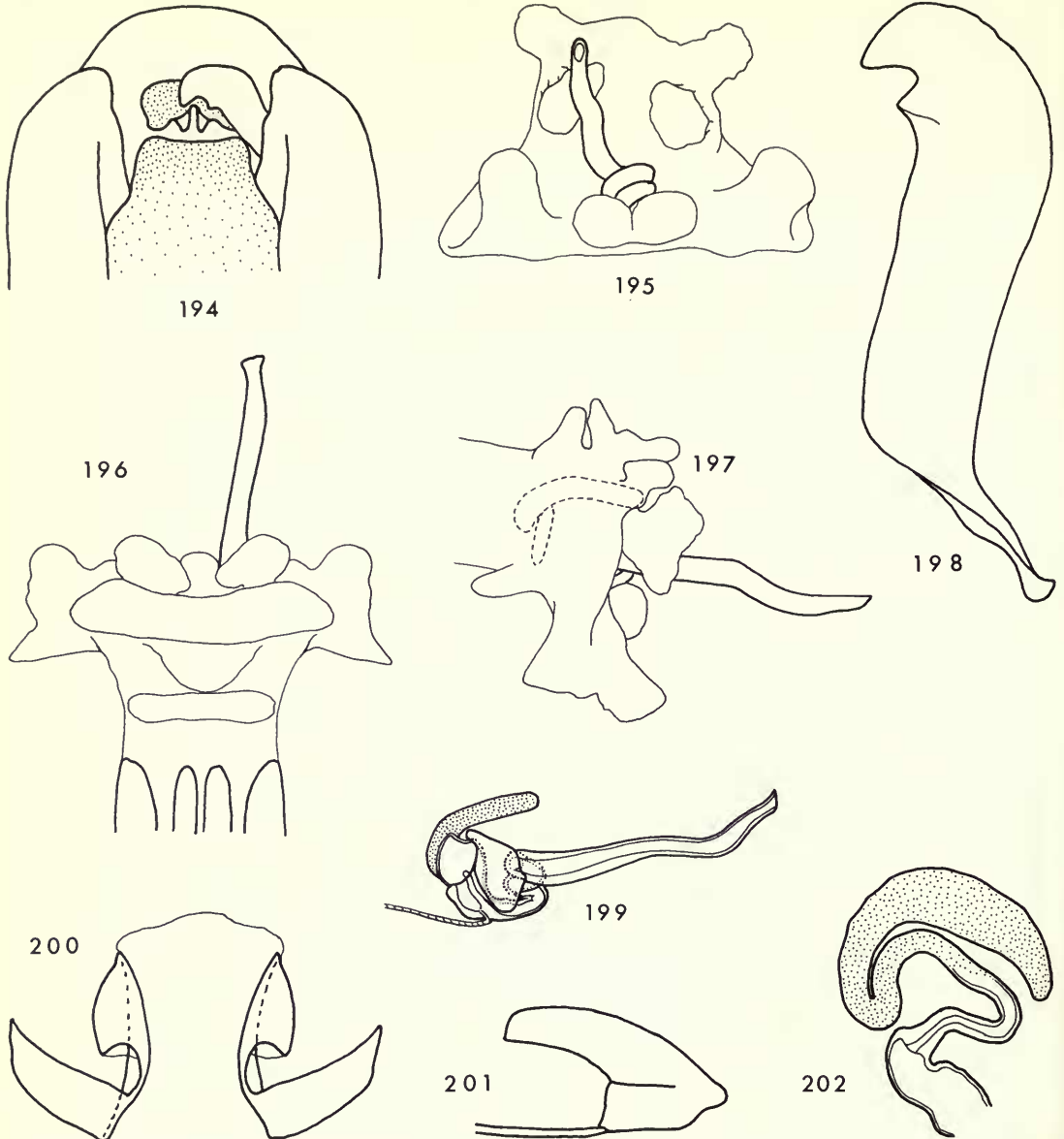


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Figs 187-193 *Clavigralla* species. (187) *tomentosicollis*, head of ♀, right lateral view; (188) same, ♀ pronotum, dorsal view; (189) *scutellaris*, head of ♀, right lateral view; (190) same, ♀ pronotum, dorsal view; (191) *tomentosicollis*, left metathoracic peritreme, lateral view; (192) same, right posterior femur and tibia of ♂, anterior view; (193) same, left lateral margin of ♀ abdominal sternites III-VII, ventral view.



Figs 194–202 *Clavigralla tomentosicollis*. (194) apical two-thirds of ♂ genital capsule, right paramere removed, dorsal view; (195) conjunctiva and vesica, posterior view; (196) same, dorsal view; (197) same, left lateral view (broken lines show position of wings and straps of ejaculatory reservoir complex); (198) left paramere, dorsal view; (199) ejaculatory reservoir complex, left lateral view with left wing and strap removed, right wing stippled, right strap obscured by body of reservoir; (200) sclerites of dorsal wall of gynatrium, dorsal view; (201) left second valvula, lateral view; (202) spermatheca.

thirds with long, erect, colourless and long, tomentose, silvery types of hair intermingled, anteriorly with two tufts of long, erect, dark brown hairs. Thoracic pleura, thoracic and abdominal sterna and abdominal laterotergites with short, decumbent, slightly tomentose, silvery pubescence; propleura and thoracic and abdominal sternites with sparse, short, erect, colourless hairs intermixed with the silvery ones; mesopleura and metapleura with similar but denser pubescence intermixed; laterotergites with very short, semi-decumbent, pale to dark brown pubescence. Clavus and corium with very short, sparse, crisped, decum-

bent, silvery to golden pubescence intermixed with very short, semidecumbent to suberect, pale to dark brown, bristle-like pubescence. Femora throughout and tibiae basally with short, rather sparse, decumbent, silvery to golden-brown pubescence; legs throughout, including these areas, with short, suberect to rather long, erect, colourless pubescence.

Head pinkish brown, dorsally with numerous granules piceous, laterally and ventrally almost entirely piceous except for stramineous bucculae. Antennae stramineous, often suffused pink, segment I usually with a few granules in basal half and a streak or blotch ventrolaterally in apical third piceous, apical one-quarter usually pinkish brown. Thorax and abdomen pinkish brown; main colour pattern of pronotum due to the pubescence, declivent area appearing off-white, completely divided by a dark, longitudinal band along midline where piceous granules are visible; large tubercles on lateral margins and a few scattered tubercles on disc piceous, projecting through indumentum; posterior lobe of pronotum rich brown, due to coloration of both surface and pubescence; posterolateral spines piceous or dark brown; scutellum pinkish brown, disc anteriorly piceous, colour mostly obscured by pubescence; thoracic pleura each usually with a large, brown or piceous, median macula; acetabula often brown; meso- and metasternum piceous; abdominal sterna with ill-defined stramineous or pale pinkish brown spots contrasting weakly with pinkish brown ground colour, sterna III–VII each with a small, stramineous spot in the middle of each lateral margin, sterna III and often IV medially and II–IV, V or VI laterally with poorly defined piceous areas; laterotergites each with a small, stramineous spot on lateral margin adjacent to stramineous spot on margin of corresponding sternum. Clavus and corium stramineous, suffused with pink or pinkish brown especially on veins and on apical one-third of corium, anterior veins of corium in basal half with a few large granules piceous. Membrane of hemelytron evenly infusate except for basal cells and veins of disc which are milky-hyaline. Legs stramineous; coxae and trochanters with large, piceous patches; each femur with apical half rufous brown with obscurely paler markings, apical area of darker colour where it borders on paler, basal area with a more or less extensive piceous band, so that junction between the pale and dark areas is abrupt and very distinct; all femora with a few, small spots in rows in basal halves piceous (Fig. 192); tibiae usually with basal and apical annuli red-brown and median penannular marking, interrupted on dorsal surface of tibia, piceous; all tarsal segments infusate apically, at least beneath.

Egg usually with 5–6 aeromicropyles in a ring.

REMARKS. Within its subgroup, this species is distinguished by its large size and almost straight posterior tibia from all species except *C. scutellaris*, from which it may be distinguished by a careful examination of the head shape, length of first rostral segment and details of the pronotal pubescence. A summary of morphometric variation in *C. tomentosicollis* and *C. scutellaris* is presented in Table 1. *C. tomentosicollis* is a common pest species throughout most of subsaharan Africa, though absent from the north-east (where it is replaced by *C. scutellaris*) and rare in forest areas including the Congo basin. Most records of '*Acanthomia brevisrostris*' refer to this species. In economic literature the species is usually recorded as *Acanthomia tomentosicollis*. English names are 'bean bug' and 'spiny brown bug'. According to Smit (1964) it is called 'ysterbek' in Afrikaans. A colour figure is given by Bohlen (1973 : 33, fig. 158). Materu (1972) should be consulted for descriptions of the egg and nymphal instars. Recorded host-plants are 'beans' (*Phaseolus* spp.), cowpea (*Vigna*), hyacinth bean (*Dolichos*), chick pea (*Cicer*), pigeon pea (*Cajanus*) and *Tephrosia*. Publications on the pest status, biology and control include those of Fuller (1922), Anonymous (1926; 1927), Johnston (1930–1931), Smit (1964 : 134), Swaine (1969), Materu (1970; 1971), Materu & Makusi (1972; 1973), Bohlen (1973) and Taylor & Omoniyi (1972) discuss host-plant preference, pest status and variation in the morphology of the egg and the same paper and those of Taylor (1975) and Egwuatu & Taylor (1977a; 1977b) deal with various aspects of the parasitization of the eggs by *Gryon gnidus* (Nixon) (Hymenoptera : Scelionidae) and the same authors (1977c) give a detailed account of the biology of *C. tomentosicollis* under field and laboratory conditions.

DISTRIBUTION. Throughout the African mainland from Senegal and Sudan in the north to Cape Province in the south; absent from extreme north-eastern part of Ethiopian region (drier parts of Sudan and Kenya); present in Zanzibar and Comoro Is. but not recorded from other islands.

MATERIAL EXAMINED

Clavigralla tomentosicollis Stål, lectotype ♀, South Africa: 'Caffraria' (*J. Wahlberg*) (NR, Stockholm).

Numerous specimens from the following localities. Senegal: Bambey. Gambia: Jambour. Ivory Coast: Bouake. Ghana: Yapi; Tamale; Zuo; Jimle; Zau; Krachi; Abutia; Buriso. Togo: Sambu; Yendi; Sag-

Table 1 Morphometric variation in *Clavigralla tomentosicollis* Stål and *C. scutellaris* (Westwood)

	Length (mm)	Width of pronotum/ width of head	Length of IAS/width of head	Length of IRS/width of head	Length of posterior tibia/ length of posterior femur	Size of sample
Males						
<i>tomentosicollis</i>	8.8	2.65	1.27	0.73	0.77	
South Africa	(8.3-9.4)	(2.35-2.77)	(1.19-1.34)	(0.68-0.81)	(0.75-0.83)	10
<i>tomentosicollis</i>	9.1	2.66	1.29	0.75	0.75	
Central Africa	(8.6-9.7)	(2.51-2.84)	(1.18-1.39)	(0.69-0.79)	(0.73-0.77)	10
<i>tomentosicollis</i>	9.4	2.79	1.23	0.72	0.72	
West Africa	(8.8-9.7)	(2.56-3.10)	(1.17-1.28)	(0.68-0.74)	(0.70-0.75)	10
<i>scutellaris</i>	9.6	2.69	1.26	0.62	0.72	
Africa and Arabia	(8.8-10.3)	(2.58-2.81)	(1.18-1.39)	(0.55-0.66)	(0.69-0.77)	9
<i>scutellaris</i>	9.5	2.80	1.31	0.66	0.74	
Asia	(9.3-9.9)	(2.68-2.97)	(1.21-1.39)	(0.63-0.69)	(0.73-0.77)	5
Females						
<i>tomentosicollis</i>	10.2	2.77	1.26	0.77	0.76	
South Africa	(9.3-11.0)	(2.54-2.93)	(1.21-1.31)	(0.69-0.83)	(0.73-0.80)	10
<i>tomentosicollis</i>	10.4	2.84	1.28	0.77	0.76	
Central Africa	(9.8-11.1)	(2.70-3.05)	(1.24-1.32)	(0.73-0.81)	(0.73-0.88)	10
<i>tomentosicollis</i>	10.6	3.1	1.20	0.74	0.73	
West Africa	(9.8-11.5)	(2.67-3.18)	(1.10-1.27)	(0.63-0.78)	(0.68-0.80)	10
<i>scutellaris</i>	11.2	2.96	1.26	0.63	0.72	
Africa and Arabia	(10.3-12.2)	(2.73-3.12)	(1.15-1.38)	(0.56-0.67)	(0.68-0.76)	9
<i>scutellaris</i>	10.5	2.97	1.26	0.66	0.73	
Arabia	(9.8-11.3)	(2.81-3.12)	(1.16-1.32)	(0.58-0.76)	(0.70-0.76)	9

IAS: basal segment of antenna. IRS: basal segment of rostrum. Figures quoted are means, with ranges beneath in brackets. South Africa: Republic of South Africa only. Central Africa: Zaire, Zambia, Tanzania. West Africa: Ghana, Togo, Nigeria.

ranga. **Nigeria:** Ile-Ife; Zaria, Samaru; Samaru; Samaru, Dam; Samaru-Da; Kano, Gumel; Kano; Katsina Prov.; Malumfashi; Bida; Ibadan. **Zaire:** Faradje; Gandajika; Lubumbashi; Ngowa; Kwango; Albertville; Moliro. **Sudan:** Torit; W. Darfur; Gebel Murra, Killing, W. side of mountain. **Uganda:** Kampala; Entebbe; Eastern Prov., Kadunguru. **Kenya:** Ol Donto Sabuk; Rabai; Mombasa. **Tanzania:** Zanzibar; Ilonga; Arusha; Morogoro; Rukwa Drift, west escarpment; Kilimanjaro, west; Lake Manyara. **Malawi:** Zomba; Ruo Valley; Mlanje. **Zambia:** Niamadzi River, near Nawalia; Mid Luangwa Valley; Serenje District. **Mozambique:** Valley of Kola River, near E. Mt Chiperone; Vila Paiva d'Andrada. **Rhodesia:** Salisbury; Sawmills; Bulawayo, Matopos; Hope Fountain. **Angola:** Vila Flor, Huambo. **Botswana:** Bakgatla, Sebele. **South West Africa:** Ovamboland, Oshikango. **South Africa:** Transvaal, Rustenburg; Tvl, Warmbaths; Tvl, Warmbad; Tvl, Towoomba; Tvl, 22 km NE. of Potgieterarus; Tvl, base Magoebaskloof; Tvl, Premiermyn; Tvl, Waterval Boven; Tvl, Tierpoort; Tvl, Pretoria; Tvl, Pretoria, Roodeplaat; Tvl, Silikat nek; Tvl Johannesburg; Tvl, Barberton; Natal, Lake St Lucia, Charters Creek; Natal, Port Shepstone; Natal, Scotsbrough; Natal, Zululand, Hedley; Natal, Zululand, Mtunzini; Natal, Howick; Natal, Tugela River near Weenen; Natal, Estcourt; Natal, Hilton; Natal, Greytown; Natal, Durban; Natal, Port St John; Natal, Selati, Zoutpansberg; Cape Province, Ceres; C. P., Krakeel; C. P., Krakeel River; C. P., Barrydale; C. P., Riversdal; C. P., Ladismith; C. P., Oudshorn; C. P., Outshorn; C. P., Port Elizabeth; C. P., Knysna District, Harkerville Forest Reserve; C. P., Alice; C. P., Stellenbosch; C. P., Ongeluks nek; C. P., Queenstown; C. P., Swellendam; C. P., Cape Town; C. P., Cape Peninsula, Camps Bay; C. P., Keurboom River; C. P., Du Toits Kloof.

Altitudes recorded on labels: mostly 300-1500 m; one locality in Sudan at 2100 m.

Host-plants recorded on labels: cowpea (*Vigna*) in Senegal, Nigeria, Tanzania and Botswana; pigeon pea (*Cajanus*) in Nigeria, Zaire and Rhodesia; *Dolichos lablab* Linnaeus in Ghana and

Tanzania; beans (*Phaseolus*) in Tanzania and South Africa; soya bean (*Glycine*) in Nigeria; *Tephrosia* in Gambia; 'peas' in Ivory Coast; unidentified legume in Nigeria; cotton (*Gossypium*) in Ghana; spinach (*Spinacea*) in South Africa and 'weeds' in Nigeria.

Habitats recorded on labels: mango orchard, vegetable garden, farm nutwoods and on plant bases.

Depositories of material: IRSNB, Brussels; NM, Bulawayo; University of Ife, Ile-Ife; UG, Legon; Duarte coll.; BMNH, London; AMNH, New York; PPRI, Pretoria; TM, Pretoria; CAS, San Francisco; IAR, Samaru; MRAC, Tervuren; Slater coll.

Clavigralla scutellaris (Westwood)

(Figs 189, 190)

Coreus scutellaris Westwood, 1842 : 24. Lectotype ♂, INDIA (UM, Oxford), designated by Dolling (1978 : 291) [examined].

Clavigralla scutellaris (Westwood) Dallas, 1852 : 514.

Acanthomia brevisrostris Stål, 1873 : 82. Lectotype ♀, SUDAN (NR, Stockholm), designated by Dolling (1978 : 291). [Synonymized by Dolling, 1978 : 291.]

Length: ♂, 8.8–10.3 mm, mean 9.6 mm (n = 14); ♀, 9.8–12.2 mm, mean 10.8 mm (n = 18). Very similar indeed to *C. tomentosicollis*. A full account of this species is given by Dolling (1978 : 291–293). Morphometric data for this species are given in Table 1 (above), where *C. tomentosicollis* is compared. Additional data for African and Arabian specimens are as follows. Ratio of lengths of antennal segments I : II : III : IV in males about 1.00 : 0.84 : 0.71 : 1.05, in female about 1.00 : 0.85 : 0.73 : 1.03. Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 0.91 : 0.76 : 1.19, in female about 1.00 : 0.92 : 0.76 : 1.16.

Head (Fig. 189) more strongly declivent than that of *C. tomentosicollis*, frons making an angle of about 30° with the vertical. Rostrum shorter, first segment at rest with apex reaching posteriorly to a point distinctly anterior to posterior margin of eye (see Fig. 189 and Table 1). Stål (1873 : 82) states that the antennae are shorter and the posterolateral angles of the abdominal sternites less prominent in this species than in *C. tomentosicollis*. These differences are not substantiated by the larger number of specimens now available.

Sculpture, pubescence and coloration as in *C. tomentosicollis* except that antennal segment I is almost uniform pinkish brown, median annuli of tibiae are evanescent and area of pale pubescence on pronotum is divided by a dark band for only its anterior half to two-thirds (Fig. 190) and extends posteriorly in a single median undulation.

REMARKS. This species is extremely close to *C. tomentosicollis*, from which it may be distinguished by the steeper declivity of the frons, the shorter rostrum and the slight difference in pronotal pubescence mentioned above. No differences between the two species could be discerned in either the male or female genitalia. Most records of '*Acanthomia brevisrostris*' in the literature, including that of Johnston (1930), refer to *C. tomentosicollis*. I have seen no specimens attributable to this species from localities west of Sudan. Nixon's (1943) record of the egg parasite *Microphanurus striaticeps* Dodd (Hymenoptera: Scelionidae), from '*Acanthomia brevisrostris*' in Sudan could refer to either species; its hosts also include Pentatomidae. Authentic host-plant records are *Dolichos lablab* Linnaeus in South Yemen and *Cajanus cajan* (Linnaeus) Millspaugh in India.

DISTRIBUTION. A crescent-shaped area from Kenya through Arabia and Pakistan to western India.

MATERIAL EXAMINED

Coreus scutellaris Westwood, lectotype ♂, India: Gogo (UM, Oxford). *Acanthomia brevisrostris* Stål, lectotype ♀, Sudan: Chartum (= Khartoum) (Schauf) (NR, Stockholm).

Kenya: 1 ♀, Marsabit Forest, 19.viii.1977, by sweeping (J. H. Martin); 1 ♂, Northern Frontier District, Wajir, 25.i.1955 (J. Lansbury); 1 ♂, S. Nyeri, vi.1949 (van Someren); 1 ♀, Lukenia, iii.1937 (van Someren) (BMNH, London). Sudan: 1 ♂, no precise locality, 16.iii.1926 (G. R. F. Medani, F. G. S. Whitfield); 2 ♀, Berber Prov., Lulua, 1908 (H. H. King); 3 ♂, 1 ♀, Ed Damer, 5–10.vii.1961 (R. Linnavuori) (BMNH, London). Southern Yemen: 3 ♂, 3 ♀, El Kod, xii.1957, on *Dolichos lablab* Linnaeus (R. C. M. Darling); 1 ♀, Wadi Dareija, SW. of Dhala, c. 1400 m, 6–9.xi.1937 (H. Scott, E. B. Britton) (BMNH, London). Oman: 1 ♀, Oman, Al Wafi, 18.iii.1976 (K. M. Guichard) (BMNH, London).

Extralimital specimens. **Afghanistan:** Nengrahar Province. **Pakistan:** Hangu, Hyderabad, Karachi. **India:** Hyderabad (A. P.), Bombay, Coimbatore, Thekkadi, Trivandrum, Chickballapur. (Moravské Museum, Brno; Karachi University; BMNH, London. For details see Dolling, 1978 : 293.)

Clavigralla annulipes Signoret **comb. rev.**

(Figs 203–208)

Clavigralla annulipes Signoret, 1860 : 943. Holotype, MADAGASCAR ('Musée de Naples', fide Bergróth, 1903 : 297) [not examined].

Acanthomia annulipes (Signoret) Bergróth, 1903 : 297.

Length: ♂, 9.4–10.1 mm, mean 9.7 mm (n = 12); ♀, 10.0–11.3 mm, mean 10.4 mm (n = 11). Similar in size and build to *C. tomentosicollis*, but differing in many details.

Antennifers almost parallel; head shape similar to that of *C. tomentosicollis*. Length of antennal segment I divided by width of head including eyes in male 1.08–1.28, mean 1.18 (n = 12), in female 1.14–1.22, mean 1.17 (n = 11). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.82 : 0.74 : 1.11, in female about 1.00 : 0.81 : 0.72 : 1.03. Length of basal segment of rostrum divided by width of head including eyes in both sexes 0.66–0.75, mean 0.69 (n = 6). Ratio of lengths of rostral segments I : II : III : IV in male about 1.00 : 1.06 : 0.84 : 1.32, in female about 1.00 : 0.94 : 0.69 : 1.21.

Pronotum (Fig. 203) strongly declivent, posterolateral angles not prominent, each bearing a short, slightly posteriorly directed spine, disc with a few, short, blunt, projecting tubercles; posterior lobe with a low, transverse keel in middle, bisected by a more prominent longitudinal keel; width across apices of posterolateral spines divided by width of head including eyes in male 2.50–2.75, mean 2.63 (n = 12), in female 2.55–2.76, mean 2.65 (n = 8). Scutellum convex, midline depressed, apex slightly produced. Corium with apex slightly produced, at rest reaching posteriorly to level of suture between laterotergites V and VI. Posterior tibia distinctly arcuate in basal third, its length divided by that of posterior femur 0.69–0.74, mean 0.71 (n = 6).

Abdominal sternites III–VII with posterolateral angles acute, prominent (Fig. 204). Male genital capsule similar to that of *C. tomentosicollis*. Paramere (Fig. 205) rather similar to that of *C. tomentosicollis* but apex distinctly angled inwards, not curved. Conjunctiva (Figs 206–208) with dorsomedian lobe low, M-shaped, intermediate dorsal lobe conical, distal dorsomedian lobe obsolete, distal dorsolateral lobes rather large, almost globular, a pair of large, T-shaped lobes arising from posterior face of conjunctiva above origin of vesica, apical ventral, distal ventrolateral and ventral lobes similar in form to those of *C. tomentosicollis*; all lobes membranous. Vesica rather short. Female genitalia as for *C. tomentosicollis*.

Sculpture, pilosity and coloration generally as in *C. tomentosicollis*. Antennae with segment I entirely brown. Membrane of hemelytron evenly suffused with brown pigment except for colourless basal cells. Area of brown pubescence on posterior lobe of pronotum almost completely divided into two triangular areas by a band of pale, silvery hairs extending posteriorly from declivent area along raised midline of posterior lobe and enclosing a tuft of erect, brown hairs between the apices of the two lateral triangles. Scutellum with erect, slightly tomentose, pale golden to silvery pubescence, in an almost globular arrangement, very slightly embrowned anteriorly. Tibiae without median pigmented annuli, or annuli present but faint.

REMARKS. Within the *tomentosicollis*-subgroup this species seems to be more closely allied to *C. curvipes* and *C. simillima* than to *C. tomentosicollis* and *C. scutellaris* by reason of the distinctly curved posterior tibiae and the pattern of pronotal pubescence. It differs from *C. curvipes* and *C. simillima* and from the only other Malagasy species of the *tomentosicollis*-group, *C. pusilla*, by its larger size, and from the last named species by the even pigmentation of the hemelytral membrane.

DISTRIBUTION. Southern Madagascar.

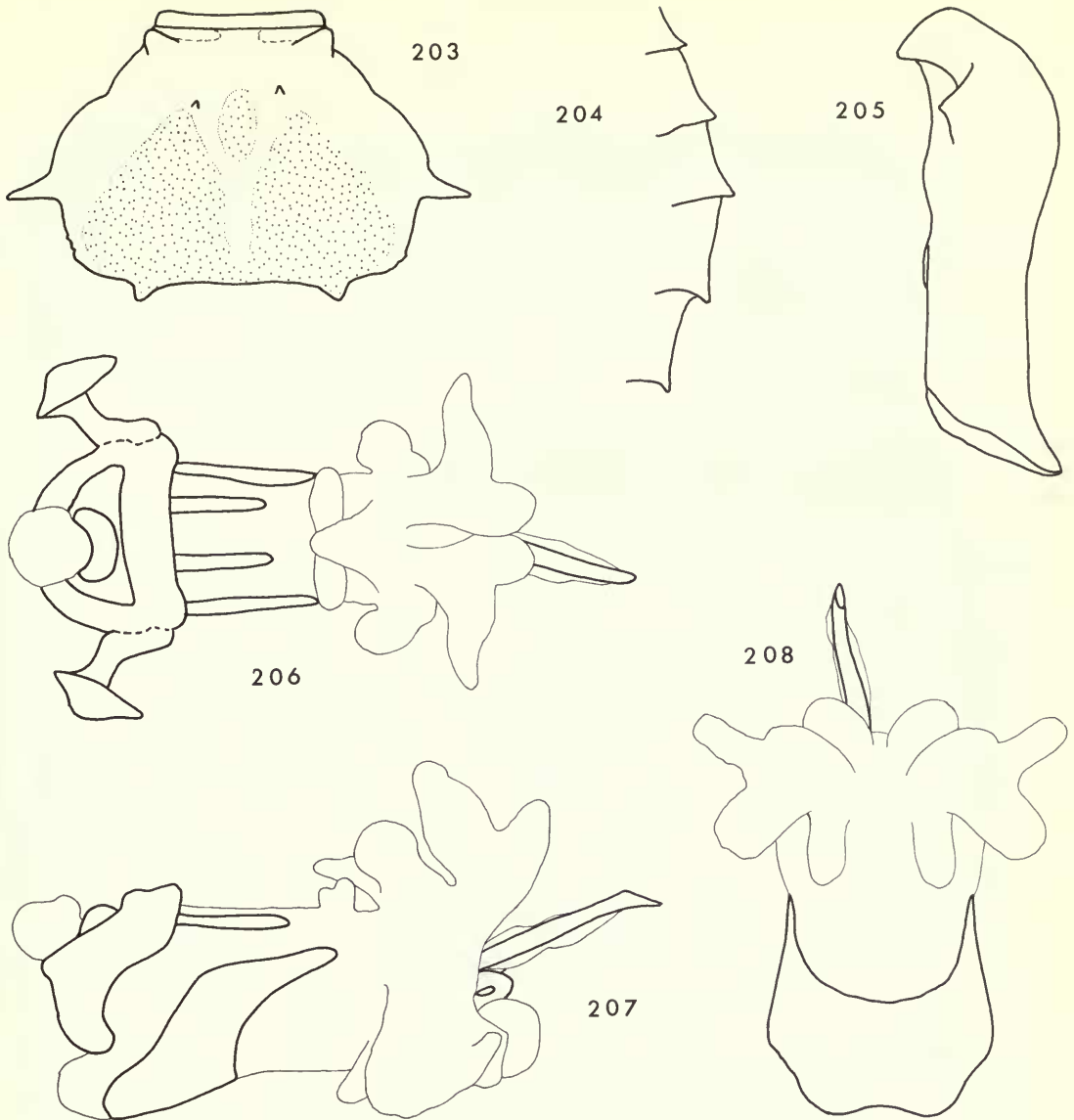
MATERIAL EXAMINED

Madagascar: 8 ♂, 10 ♀, Région Sud de l'Île, Bekily, vi.1936 (*A. Seyrig*) (MNHN, Paris and BMNH, London); 3 ♂, 2 ♀, Ampandrandava (*Seyrig*) (MNHN, Paris); 1 ♂, Région du Sud, Andrahomana, 1901 (*Ch. Alluaud*) (MNHN, Paris).

Clavigralla curvipes (Stål) **comb. n.**

(Figs 211, 213–217)

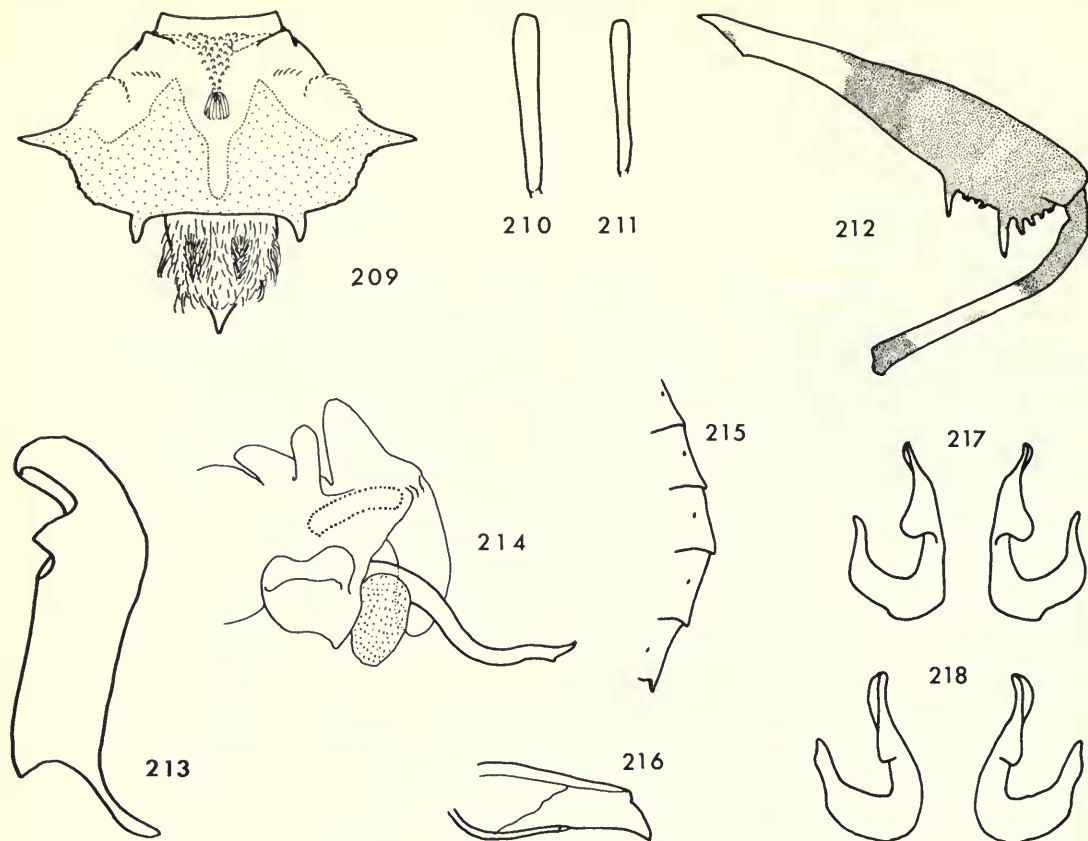
Acanthomia curvipes Stål, 1873 : 82. LECTOTYPE ♂, GUINEA-BISSAU (NM, Vienna), here designated [examined].



Figs 203-208 *Clavigralla annulipes*. (203) pronotum of ♀, dorsal view; (204) left lateral margins of ♂ abdominal sternites III-VII, ventral view; (205) left paramere, dorsal view; (206) aedeagus, dorsal view; (207) same, left lateral view; (208) same, ventral view.

Length: ♂, 7.3-8.3 mm, mean 7.8 mm ($n = 9$); ♀, 7.6-8.5 mm, mean 8.0 mm ($n = 8$). A small species, similar in build to the much larger *C. tomentosicollis* but with posterior tibia strongly arcuate at base, abdomen proportionally narrower and pubescence of pronotum differently organized.

Head short, antennifers parallel to slightly divergent. Antennal segment I (Fig. 211) slender, narrowest at a point about one-third of its length from base, then gradually increasing in thickness towards apex; length of this segment divided by width of head including eyes in male 1.03-1.13, mean 1.09 ($n = 9$), in female 1.00-1.06, mean 1.02 ($n = 8$). Ratio of lengths of antennal segments I : II : III : IV in male about 1.00 : 0.78 : 0.70 : 0.94, in female about 1.00 : 0.80 : 0.72 : 0.96. Length of basal segment of rostrum divided by width of head including eyes in both sexes 0.63-0.73, mean 0.67 ($n = 16$). Ratio of lengths of rostral segments I : II : III : IV in both sexes about 1.00 : 0.90 : 0.49 : 0.86; apex of rostrum at rest reaching disc of mesosternum.



Figs 209–218 *Clavigralla* species. (209) *simillima*, holotype ♂, pronotum and scutellum, dorsal view; (210) same, first antennal segment of ♀, dorsal view; (211) *curvipes*, first antennal segment of ♀, dorsal view; (212) *simillima* ♀, right posterior femur and tibia, posterior view; (213) *curvipes*, left paramere, dorsal view; (214) same, conjunctiva and vesica, left lateral view, outline of left wing of ejaculatory reservoir complex dotted; (215) same, left lateral margin of ♀ abdominal sternites III–VII, ventral view; (216) same, second valvula, lateral view; (217) same, sclerites of dorsal wall of gynatrium, dorsal view; (218) *simillima*, sclerites of dorsal wall of gynatrium, dorsal view.

Pronotum with posterolateral spines slender, directed laterally, slightly upcurved, width across apices of spines divided by width of head including eyes in male 2.24–2.72, mean 2.52 ($n = 5$), in female 2.39–2.64, mean 2.46 ($n = 7$). Scutellum rather strongly convex. Corium with apex produced, at rest reaching posteriorly to level of basal one-third of laterotergite VI. Posterior tibia strongly curved at base, its length divided by that of posterior femur 0.63–0.68, mean 0.66 ($n = 17$).

Abdomen with posterolateral angles of sternites III–VII (Fig. 215) acute, slightly projecting. Male genital capsule with lip rounded, tongue apically trifid. Paramere (Fig. 213) with strong tooth near middle of blade on dorsal surface and with apex strongly curved inward. Ejaculatory reservoir with wings and straps long; vesica of moderate length. Conjunctiva (Fig. 214) with dorsomedian lobe low, rounded, a pair of finger-like lobes arising from its base posterolaterally; intermediate dorsal lobe high, rather narrowly conical; distal dorsomedian and distal dorsolateral lobes obsolete; a large, downcurved, median lobe arising near top of posterior face of conjunctiva; apical ventral lobes large, with distinct surface roughness; distal dorsoventral lobes of the form usual in the genus; ventral lobes absent. Female with tergum IX distinctly but not strongly deflexed at apex. Second valvula of ovipositor (Fig. 216) bearing a prominent dorsal tooth. Sclerites of dorsal wall of gynatrium (Fig. 217) U-shaped, median arms with broad distal expansion. Spermatheca with bulb narrowly lunate, less than three times as wide as main part of duct, which is attached subterminally to it and is not convoluted but simply U-shaped; total length of duct about twice that of bulb, length of broad portion about two-thirds as long as bulb.

Sculpture and distribution of pubescence generally as for *C. tomentosicollis*. Junction between anterior, pale and posterior, dark areas of pronotal pubescence strongly M-shaped (as in *C. simillima*, Fig. 209), with an isolated tuft of erect, brown hairs in the triangle of pale pubescence between the anterior angles of the 'M'; pale pubescence extending posteriorly in a band along midline of posterior lobe to its posterior margin. Scutellum with two tufts of dark brown pubescence anteriorly on disc, otherwise with long, slightly tomentose, white pubescence shaped roughly into a hemisphere, not organized into spine-like tufts. Coloration in general as in *C. tomentosicollis* but usually with brown or piceous markings at apical border of corium more pronounced. Membrane of hemelytron suffused with brown, especially on disc, occasionally pigment also concentrated into 1 or 2 darker brown spots between bases of longitudinal veins where these arise from basal cells; veins themselves colourless except for bases of 2 longitudinal veins entering membrane from corium, which are dark brown.

Ovarian egg with 3 (in two cases) or 4 (in six cases) aeromicropyles.

REMARKS. The small size, pronotum shape, basally arcuate posterior tibiae and coloration distinguish this species from all others except *C. simillima*, which differs chiefly in the shape of the first antennal segment and the sclerites of the dorsal wall of the gynatrium.

DISTRIBUTION. This species occupies a band of territory between latitudes 15° N and 3° S from Guinea-Bissau to Uganda.

MATERIAL EXAMINED

Acanthomia curvipes Stål, lectotype ♂, Guinea-Bissau: 'Bissao' (in *Signoret* coll.) (NM, Vienna).

Ghana: 1 ♂, Legon, 14.viii.1964 (*S. A. Whyte*); 1 ♀, Legon, 29.xi.1968; 1 ♂, Legon, 1.ix.1968 (*R. Kumar*); 3 ♂, 1 ♀, Legon, 6.xii.1968 (*Kumar*); 1 ♂, 1 ♀, Tafo, 1.iv.1966, 3.i.1967, by pyrethrum knockdown from cocoa; 1 ♀, Tafo, 22.iv.1967; 1 ♀, Tafo, on ground, 15.ii.1956 (*D. Leston*); 1 ♂, Tafo, 19.i.1966, in u.v. light-trap (*Leston*); 1 ex. without abdomen, Keta, 8.xi.1967 (*Leston*); 1 ♂, Wegbe, V. R., 1.xi.1967 (*Leston*) (UG, Legon). **Togo:** 1 ♂, Missahoué, 650 m, vi.1963 (*Mme Y. Schach*) (MRAC, Tervuren). **Nigeria:** 2 ♂, N. Nigeria, Gusau, 1.ix.1975, at u.v. light (*L. E. Wallace, J. C. Deeming*) (IAR, Samaru); 1 ♂, 1 ♀, Bida, on weeds, 22.ix.1955; 1 ♀, N. W. State, 18 km NW. of Mokwa, Zugurma, in riparian rainforest by River Eku, 11–19.viii.1970 (*P. H. Ward*) (BMNH, London). **Zaire:** 2 ♂, 2 ♀, Faradje, 29° 40' E, 3° 40' N, i.1913 (*Lang, Chapin*) (AMNH, New York). **Uganda:** 1 ♂, Northern Buddu, 1160 m, 16–18.ix.1911 (*S. A. Neave*); 1 ♂, Kampala, 2–20.iv.1918 (*C. C. Gowdey*); 2 ♀, Kawanda, 11.iv.1940, on *Desmodium adscendens* De Candolle and 14.iv.1940 on 'lulimilumu' (*H. H.*) (BMNH, London). **Rwanda:** 1 ♂, Rubona, 1.v.1963 (*G. Pierrard*) (MRAC, Tervuren).

Clavigralla simillima sp. n.

(Figs 209, 210, 212, 218)

Length: ♂, 7.2–8.1 mm, mean 7.8 mm (n = 5); ♀, 7.8–8.5 mm, mean 8.1 mm (n = 9). Very similar indeed to *C. curvipes*.

Antennal segment I (Fig. 210) rather stout, of almost uniform thickness in the basal half, then expanding slightly and gradually towards apex. Length of antennal segment I divided by width of head including eyes in male 1.00–1.21, mean 1.09 (n = 5), in female 1.01–1.14, mean 1.09 (n = 9); ratio of lengths of segments I : II : III : IV in male about 1.00 : 0.78 : 0.70 : 1.00, in female about 1.00 : 0.77 : 0.68 : 0.91. Length of rostral segment I divided by width of head including eyes in both sexes 0.55–0.71, mean 0.65 (n = 14); ratio of lengths of segments I : II : III : IV about 1.00 : 0.91 : 0.48 : 0.87.

Width of pronotum across apices of posterolateral spines divided by width of head including eyes in male 2.57–2.65, mean 2.61 (n = 4), in female 2.44–2.75, mean 2.64 (n = 7). Length of posterior tibia (Fig. 212) divided by length of posterior femur 0.63–0.69, mean 0.65 (n = 14).

Male genitalia as in *C. curvipes* but vesica on average shorter. Second valvula of ovipositor with dorsal tooth less prominent than in *C. curvipes* and sclerites of dorsal wall of gynatrium (Fig. 218) with distal expansions of median arms less pronounced.

Pattern of pubescence on pronotum and scutellum (Fig. 209) and elsewhere and coloration and sculpture of integument as in *C. curvipes*.

REMARKS. This is clearly a sister-species to *C. curvipes*, differing little from it in appearance and morphology. There is a slight tendency to sexual dimorphism in the length of antennal segment IV, a phenomenon not encountered in *C. curvipes*, and the pronotal posterolateral spines are on average slightly longer. The differences in the form of the sclerites of the gynatrium are not as clear-cut as Figs 217 and 218 would suggest, since the median arms of these sclerites are broad in

the sagittal plane and a slight alteration in the angle from which they are viewed can result in a pronounced change of outline. Other characters of the genitalia do not provide reliable characters for separation of the species unless several specimens are available for comparison. However, the thickness of the first antennal segment is a reliable diagnostic character. It may be that the two populations treated here as species are not separated by a fertility barrier but only by the physical barriers of the Congo rainforest and the highlands of eastern central Africa.

DISTRIBUTION. The eastern half of southern Africa from Tanzania to Natal.

MATERIAL EXAMINED

Holotype ♂, **Tanzania:** E. Rukwa, 3500 ft (1100 m), iv.1938 (*D. G. MacInnes*) (BMNH, London).

Paratypes. **Tanzania:** 1 ♀, data as holotype (BMNH, London). **Zaire:** 2 ♀, Lubumbashi, 9.iii.1939, 30.iv.1939 (*H. J. Brédo*) (IRSNB, Brussels). **Malawi:** 1 ♂, SW. Lake Malawi, Monkey Bay, 2.v.1966 (NM, Bulawayo). **Mozambique:** 1 ♂, Chiluvo Hills, Vila Machado, 31.x.1967 (*E. Pinhey*) (NM, Bulawayo); 1 ex. without abdomen, Luabo, lower Zambesi River, viii.1957 (*P. J. Usher*) (TM, Pretoria). **South Africa:** 1 ♂, 'Stella Bush', xi.1905 (*Mailer*); 1 ♀, no data (probably leg. *Mailer*); 1 ♂, Natal, Durban (*J. P. Cregoe*); 1 ♀, Natal (*Bell Morley*); 1 ♀, Natal, Umbilo, 16.x.1914 (*L. Bevis*); 1 ♀, Natal, Port Shepstone, v.1897; 2 ♀, Natal, Malvern, vi.1897, 10.vi.1897; 1 ♀, Natal, Umkomaas River, 1897 (BMNH, London).

The *wittei*-subgroup

Tongue of male genital capsule bifid; pronotal disc with a pair of large, blunt, sublateral tubercles; membrane of hemelytron with a row of discrete, piceous spots, sometimes very pale, between bases of longitudinal veins. Pronotum with posterolateral angles more prominent than in other members of the *tomentosicollis*-group.

***Clavigralla wittei* (Schouteden) comb. n.**

(Figs 219–221, 223–228)

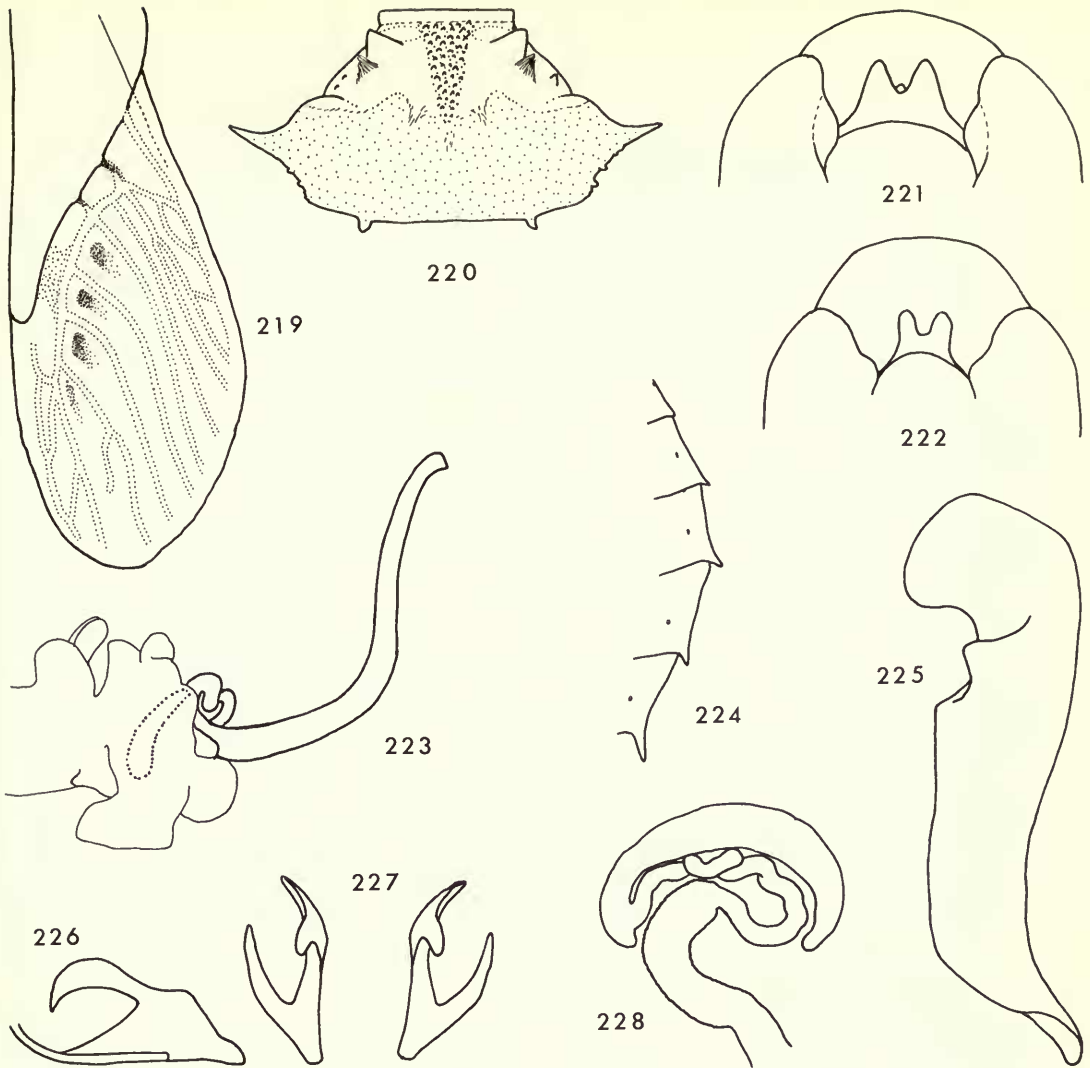
Acanthomia wittei Schouteden, 1938 : 291–292. LECTOTYPE ♂, ZAIRE (MRAC, Tervuren), here designated [examined].

Length: ♂, 7.6–9.5 mm, mean 8.5 mm ($n = 48$); ♀, 8.3–10.2 mm, mean 9.2 mm ($n = 56$). Of a rather more slender form than *C. tomentosicollis*, less deep-bodied, with more prominent pronotal posterolateral angles.

Antennifers slightly divergent. Length of antennal segment I divided by width of head including eyes in male 0.86–1.12, mean 0.99 ($n = 46$), in female 0.81–1.09, mean 0.95 ($n = 56$); ratio of lengths of segments I : II : III : IV in male about 1.00 : 0.75 : 0.72 : 1.32, in female about 1.00 : 0.76 : 0.73 : 1.28. Length of basal segment of rostrum divided by width of head including eyes in both sexes 0.62–0.81, mean 0.70 ($n = 103$); ratio of lengths of segments I : II : III : IV about 1.00 : 0.93 : 0.55 : 0.89.

Pronotum (Fig. 220) strongly declivent, posterolateral angles prominent, posterolateral spines slender, curved slightly upwards and slightly anteriorly, usually long; margins of pronotum behind spines with a few prominent tubercles; width across apices of posterolateral spines divided by width of head including eyes in male 2.31–3.14, mean 2.80 ($n = 42$), in female 2.47–3.32, mean 2.87 ($n = 48$). Scutellum strongly convex. Corium with apex distinctly produced (Fig. 219), at rest reaching posteriorly to about level of middle of laterotergite VI. Anterior femur without subapical spines beneath or rarely with a single, very small one; intermediate femur usually with a single, small, subapical spine beneath, which is sometimes absent; posterior femur usually with 2–4 small spines between the two major spines. Posterior tibia almost straight, its length divided by that of posterior femur 0.68–0.79, mean 0.74 ($n = 97$).

Abdominal sternites III–VII with posterolateral angles (Fig. 224) produced into short, triangular spines. Male genital capsule (Fig. 221) with lip short, tongue deeply bifid, each half of tongue laminar, distinctly deflexed apically and laterally. Paramere (Fig. 225) strongly curved inward at apex, dorsomedial tooth of blade well developed, blade rather broad. Conjunctiva (Fig. 223) with dorsomedian lobe bearing a pair of small, finger-like lobes arising from its posterior face; intermediate dorsal and distal dorsomedian lobes low, conical; distal dorsolateral lobes absent; apical ventral lobes large, distal ventrolateral lobes of the form usual in the genus; ventral lobes poorly developed; posterior face of conjunctiva without prominent lobes. Ejaculatory reservoir complex with wings and straps long. Vesica very long, sclerites at its base large. Female sternum VII cleft for about half its median length. Second valvula (Fig. 226) with dorsal margin strongly undulating and apex produced into a lobe which is more weakly sclerotized than main body of valvula. Spermatheca (Fig. 228) with duct long, narrow portion convoluted. Sclerites of dorsal wall of gynatrium (Fig. 227) with large, anterodorsally directed tooth on each median arm.



Figs 219–228 *Clavigralla* species. (219) *wittei* ♂, apical half of left hemelytron, dorsal view; (220) same, pronotum of ♂, dorsal view; (221) same, apical half of ♂ genital capsule, dorsal view, with parameres removed; (222) *neavei*, holotype ♂, apical half of genital capsule with parameres removed, dorsal view; (223) *wittei*, conjunctiva and vesica, left lateral view, outline of left wing of ejaculatory reservoir complex dotted; (224) same, left lateral margin of ♀ abdominal sternites III–VII, ventral view; (225) same, left paramere, dorsal view; (226) same, second valvula, lateral view; (227) same, sclerites of dorsal wall of gynatrium, dorsal view; (228) same, spermatheca.

Pronotum and thoracic pleura granulate-punctate; head, antennae, legs, sterna and abdominal laterotergites weakly to very weakly granulate; major veins of clavus and corium with a few, small granules; clavus with three rows of rather small but deep punctures, corium near base weakly punctate. Abdominal terga I–VI and base of VII with fine, reticulate sculpture, I coarsely, and II finely, transversely furrowed, central one-third of III and IV with a few moderate sized to large punctures, III laterally and IV–VII with numerous, small punctures.

Head dorsally with sparse, long, erect, colourless pubescence, everywhere with fairly dense, short, decumbent and semidecumbent, silvery pubescence; antennal segment I with similar, short pubescence and some longer, suberect to erect hairs one-half to one times the width of the segment, II and III with semidecumbent pubescence about one-third as long as width of respective segments. Pronotum (Fig.

220) in declivent, anterior part with long, sparse, erect, colourless pubescence, shorter, brown, erect pubescence arising from granules in midline, a pair of pale to dark brown tufts on disc behind sublateral tubercles and of comparable size to these, and everywhere with dense, short to moderately long, slightly tomentose, silvery pubescence which extends onto anterior faces of the prominent posterolateral angles and is produced posteriorly into two tufts flanking midline; posterior, horizontal lobe of pronotum with dense, moderately long, brown pubescence which is erect anteriorly and decumbent posteriorly and laterally and with a poorly developed stripe of short, decumbent, silvery pubescence in part of midline. Scutellum with pubescence long, dense, slightly tomentose, silvery laterally and posteriorly, forming two brown tufts on disc anteriorly. Thoracic pleura with sparse, long, erect, colourless pubescence and with dense, shorter, slightly tomentose, silvery pubescence. Thoracic sterna with fairly dense, short, decumbent, crisped, silvery pubescence. Femora and coxae with fairly dense, short, decumbent, silvery pubescence, legs throughout with long, colourless, suberect to erect pubescence. Clavus, corium and abdominal laterotergites with dense, short, crisped, semidecumbent, brown and silvery hairs intermingled. Abdominal sternites with sparse, moderately long, suberect, colourless pubescence mixed with much denser and shorter, decumbent, slightly tomentose, silvery pubescence.

Coloration generally stramineous, variously suffused with pale pinkish brown, darker markings very variable in intensity and extent. Head typically with ocellar tubercles, ventral surface and most of lateral surfaces, apex of rostrum and a basal streak on lateral surface of antennal segment I brown to piceous. Anterior midline, tubercles and posterolateral angles and spines of pronotum, thoracic sterna, anterior half of disc of scutellum and two oblique streaks on each of the thoracic pleura piceous, posterior lobe of pronotum brown. Coxae, trochanters and femora except basal halves of intermediate and posterior pairs mottled with brown and piceous markings; tibiae usually with brown to piceous annuli at base, apex and middle. Corium with brown spotting or mottling on anterior veins and in apical one-third; hemelytral membrane (Fig. 219) milky hyaline with 2-4 discrete, brown spots between bases of longitudinal veins, bases of two veins where they enter membrane from corium brown; sometimes other, vaguer brown markings present at base of membrane. Abdominal sternites in middle with longitudinal markings and laterally with oblique stripes piceous or brown and variable in extent; laterotergites and corresponding area of tergite VII anteriorly each with a narrow, brown to piceous band, followed by a stramineous band which is narrow on segments III-V and broad on VI and VII, behind which is a broad, brown or piceous band continuous to posterior margin of each segment. Abdominal tergites varying from largely piceous with only a large spot above each abdominal scent-gland rudiment, a pair of lateral markings on tergites VI and VII and a narrow posterior border of VI and posterior half of VII stramineous, to a condition where tergites III-VII are largely stramineous or pale brown with piceous markings restricted to lateral areas of each tergite. Sometimes almost the entire ventral and lateral surfaces of the insect are piceous or black.

Ovarian egg with chorion strongly reticulate, each polygon of reticulation separately convex; about eight aeromicropyles present.

REMARKS. The posterolateral angles of the pronotum are more prominent in this species than in any other of the *tomentosicollis*-group. It is the most common species with distinct spots on the membrane of the hemelytron. Recorded host-plants which may be food-plants are *Schotia* (Leguminosae, Caesalpinaceae) and *Vigna*.

DISTRIBUTION. Widespread in western, eastern and southern Africa, less common in central Africa and apparently absent from South Africa except the Transvaal.

MATERIAL EXAMINED

Acanthomia wittei Schouteden, lectotype ♂, Zaire: Stanleyville (= Kisangani), v.1926, on *Schotia* (*Lt. J. Ghesquière*) (MRAC, Tervuren).

Ivory Coast: 1 ♂, Orumbe-boka, 11.x.1964 (*Gillon*); 2 ♂, 2 ♀, Man, 19.x.1968 (*J. Brenière*) (BMNH, London). **Ghana:** 2 ♂, Tafo, 13.xi.1965 (*Leston*) (BMNH, London); 1 ♂, 1 ♀, Tafo, 8.i.1967 (*R. Kumar*); 2 ♂, 1 ♀, Legon, Botanic Garden, 14.v.1967 (UG, Legon). **Nigeria:** 1 ♀, Ibadan, 21.iii.1955, on *Zea mays* Linnaeus leaf (*G. H. Caswell*) (BMNH, London); 2 ♂, 3 ♀, Zaria Province, Dumbi Wood, 26.x.1969, 15.xi.1969, 17.xi.1969 (*J. C. Deeming*); 1 ♀, Zaria, Samaru, 3.x.1971 (*Deeming*) (IAR, Samaru). **Zaire:** 1 ♂, Lake Tanganyika, Baie de Burton, 17.iv.1947 (*Miss. Tanganyika*); 1 ♀, near Mwashia, grassy plain, 1 km from saltpan, 3.v.1939 (*H. J. Brédo*) (IRSNB, Brussels); 1 ♂, Yangambi, ix-xii.1958 (*J. Decelle*); 1 ♀, Lulua, Muteba, i.1932 (*G. F. Overlaet*); 1 ♂, 2 ♀, Lulua, Kapanga, xii.1932 (*F. G. Overlaet*) (MRAC, Tervuren). **Uganda:** 12 ♂, 14 ♀, Kafu River, near Hoima, Kampala Road, 1050 m, 29-31.xii.1911 (*S. A. Neave*); 1 ♀, Entebbe, 5-9.iv.1914 (*C. C. Gowdey*) (BMNH, London). **Kenya:** 1 ♂, Mombasa Island,

Kilindini, 19–23.viii.1955 (*L. F. Brown*); 1 ♂, Mombasa, iv.1930 (*R. E. Dent*); 1 ♂, Maramas District, Ilala, 22 km E. of Mumias, 1350 m, 18–21.vi.1911 (*S. A. Neave*); 1 ♂, 2 ♀, Naivasha, vii.1937 (*H. J. A. Turner*) (BMNH, London). **Tanzania:** 2 ♂, 1 ♀, Mbeya Mt, 33° 25' E, 8° 48' S, 2100 m, trees and herbage on grass slopes, 5.viii.1959 (*Cambridge E. African Exped.*); 1 ♀, Elton Plateau, 2100 m, 34° 10' E, 9° 20' S, 7.viii.1959 (*Cambridge E. African Exped.*) (BMNH, London). **Malawi:** 1 ♀, Zomba (*H. S. Stannus*); 2 ♂, 4 ♀, Mlanje, 23.iv.1913, 2.vi.1913, 13.vi.1913 (*S. A. Neave*) (BMNH, London). **Botswana:** 1 ♀, Batawana, Totena, 9.v.1968, on cow pea (*Vigna* sp.) (*R. E. Roome*) (BMNH, London). **Zambia:** 1 ♂, Mweru-Wantipa, 1944 (*H. J. Brédo*) (IRSNB, Brussels). **Rhodesia:** 3 ♀, Bindura, ii.1959 (NM, Bulawayo). **South Africa:** 15 ♂, 15 ♀, Transvaal, Waterburg District, Plat River, 6–18.iv.1905 (*C. Swierstra*) (TM, Pretoria).

Clavigralla neavei sp. n.

(Fig. 222)

Length: ♂, 6.75–7.0 mm ($n = 2$). Female unknown. Very similar to *C. wittei* but smaller and with pronotal posterolateral angles less prominent.

Length of antennal segment I divided by width of head including eyes 0.89–0.94 ($n = 2$); length of segments II and III divided by length of segment I in holotype 0.74 and 0.64 respectively, these segments missing in paratype, IV missing in both specimens. Length of basal segment of rostrum divided by width of head including eyes 0.68–0.73 ($n = 2$).

Pronotum with posterolateral angles less prominent than in *C. wittei* and spines shorter, width across apices of spines divided by width of head including eyes 2.45–2.52 ($n = 2$). Length of posterior tibia divided by that of posterior femur 0.73–0.78 ($n = 2$).

Posterolateral angles of abdominal sternites less strongly produced than the average for *C. wittei*. Lip of male genital capsule (Fig. 222) more prominent than in *C. wittei* and tongue narrower, the two lobes cylindrical, apically rounded, the sinus between them U-shaped, not V-shaped as in *C. wittei*.

Other features, including sculpture, pubescence and coloration, as for *C. wittei*.

REMARKS. Could be confused with small specimens of *C. wittei* but distinguished by the form of the tongue of the male genital capsule.

DISTRIBUTION. Central Africa.

MATERIAL EXAMINED

Holotype ♂, **Uganda:** Entebbe, 12–20.i.1912 (*S. A. Neave*) (BMNH, London).

Paratype. **Zaire:** 1 ♂, Lubero, 14.viii.1932 (*L. Burgeon*) (MRAC, Tervuren).

Clavigralla alpica (Bergróth) comb. n.

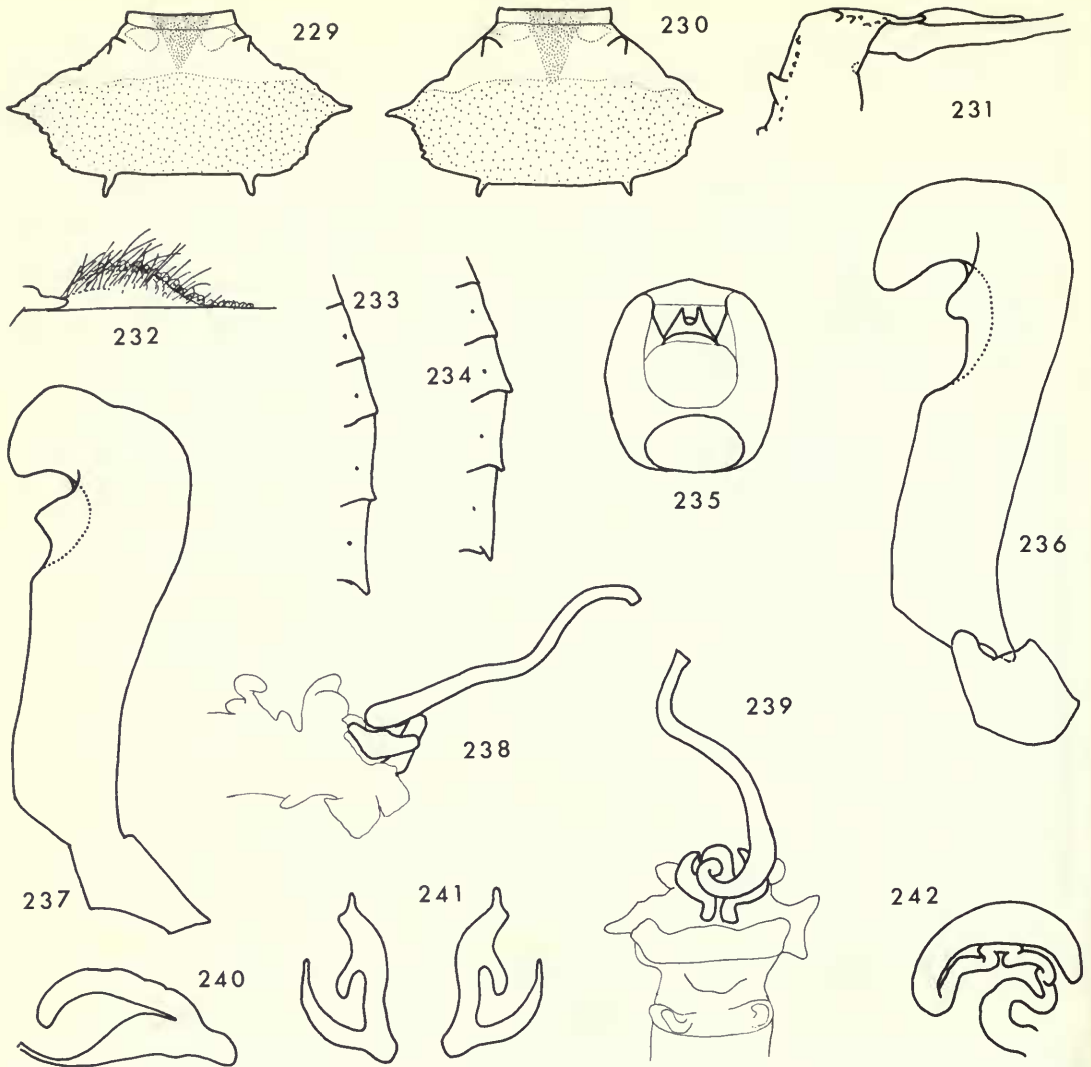
(Figs 229, 231, 233, 235, 236, 238–242)

Acanthomia alpica Bergróth, 1927 : 10. **LECTOTYPE** ♀, **ZAIRE** (NR, Stockholm), here designated [examined].

Length: ♂, 7.1–7.7 mm, mean 7.3 mm ($n = 9$); ♀, 7.3–8.3 mm, mean 7.7 mm ($n = 12$). Form depressed in comparison with other species of the genus.

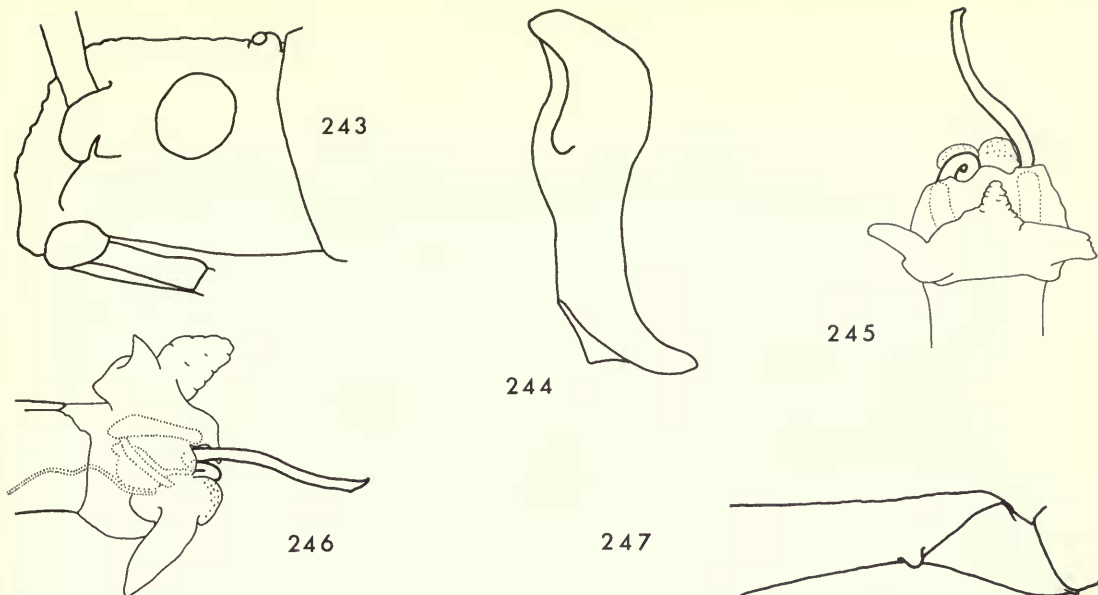
Antennifers slightly divergent. Antennae short, length of segment I divided by width of head including eyes in male 0.64–0.69, mean 0.66 ($n = 9$), in female 0.59–0.72, mean 0.64 ($n = 12$). Ratio of lengths of segments I : II : III : IV in male about 1.00 : 1.05 : 0.95 : 1.54, in female about 1.00 : 1.08 : 0.98 : 1.50; segment I shortly fusiform. Length of basal segment of rostrum divided by width of head including eyes in both sexes 0.68–0.76, mean 0.73 ($n = 18$), ratio of lengths of segments I : II : III : IV about 1.00 : 0.93 : 0.51 : 0.77.

Pronotum (Figs 229, 231) strongly declivent despite dorsoventral compression of body, its posterolateral angles strongly produced as in *C. wittei* but bearing much shorter spines; width across apices of posterolateral spines divided by width of head including eyes in male 2.33–2.55, mean 2.47 ($n = 8$), in female 2.28–2.75, mean 2.45 ($n = 12$). Scutellum (Fig. 231) weakly convex. Corium with apex produced, at rest reaching posteriorly to level of middle of laterotergite VI. Anterior and intermediate femora without or each with a very small subapical spine beneath, posterior femur usually with two major spines, the more proximal about half the length of the other, and an apical series of four spines; rarely 1 or 2 small spines are present between the major spines of the posterior femur and in one abnormal specimen examined there was an additional rather large spine just proximal to the first major spine. Posterior tibia not curved at base, its length divided by length of posterior femur 0.78–0.86, mean 0.82 ($n = 15$).



Figs 229–242 *Clavigralla* species. (229) *alpica*, ♂ pronotum, dorsal view; (230) *montana*, holotype ♂, pronotum, dorsal view; (231) *alpica*, left lateral profile of pronotum, scutellum and base of corium of ♂; (232) *montana*, holotype ♂, scutellum, left lateral view; (233) *alpica*, left lateral margins of ♂ abdominal sternites III–VII, ventral view; (234) *montana*, holotype ♂, left lateral margins of abdominal sternites III–VII, ventral view; (235) *alpica*, ♂ genital capsule, dorsal view, parameres removed; (236) same, left paramere, dorsal view; (237) *montana*, holotype, left paramere, dorsal view; (238) *alpica*, conjunctiva and vesica, left lateral view; (239) same, conjunctiva and vesica, dorsal view; (240) same, second valvula, lateral view; (241) same, sclerites of dorsal wall of gynatrium, dorsal view; (242) same, spermatheca.

Abdominal sterna III–VII with posterolateral angles (Fig. 233) very slightly prominent, acute. Male genital capsule (Fig. 235) with posterior emargination completely obliterated by lip, tongue deeply bifid. Paramere (Fig. 236) with apex hooked. Conjunctiva (Figs 238, 239) with dorsomedian lobe large, flat-topped, its posterolateral angles produced posteriorly into small, round, accessory lobes; intermediate dorsal, distal dorsomedian and distal dorsolateral lobes present but small; apical ventral and distal ventrolateral lobes moderately well developed; small ventral lobes present; vesica long. Female with second valvula of ovipositor (Fig. 240) strongly sclerotized, apex very prominent, dorsal surface strongly corrugated. Spermatheca (Fig. 242) with duct moderately and variably convoluted. Sclerites of dorsal wall



Figs 243–247 *Clavigralla annectans* and *Myla* sp. (243) *C. annectans*, holotype ♂, head, left lateral view; (244) same, left paramere, dorsal view; (245) same, inflated conjunctiva and vesica, dorsal view, outline of apices of 'wings' of ejaculatory reservoir complex dotted; (246) same, inflated conjunctiva and vesica, left lateral view, ejaculatory reservoir and associated structures indicated by dotted outlines; (247) *Myla* sp., left posterior trochanter and base of femur, posterior face.

of gynatrium (Fig. 241) with a large, barb-like process situated at about middle of median, longitudinal arms.

Sculpture and distribution of pubescence generally as in *C. tomentosicollis* but decumbent pubescence much less dense and all erect and suberect pubescence short, no hairs as long as transverse diameter of an eye. Coloration of head, exposed areas of thorax and abdomen, clavus, corium and apical two-thirds of femora pinkish brown with varying amounts of piceous coloration. Ventral surface of head, mesosternum, metasternum, disc of abdominal venter piceous. Head laterally streaked piceous, dorsally with only granules piceous or more or less heavily streaked piceous throughout. Antennal segment I always with a larger or smaller ventral piceous streak, at least towards base. Rostrum of variable coloration. Pronotum with rather sparse pubescence compared with that of other members of the *tomentosicollis*-group, dividing line between anterior, decumbent, silvery pubescence and posterior, erect to decumbent, brown pubescence almost straight (Fig. 229), posterolateral margins, patch in anterior midline of disc and at least apices of sublateral tubercles piceous, punctures of posterior region of disc often piceous. Scutellum black, with apex and distal half or more of midline cream, with pubescence along midline silver, elsewhere black or brown. Thoracic pleura and abdominal sterna more or less heavily streaked piceous; dorsal midline of abdomen always pale, cream or buff, remainder of tergites largely piceous; laterotergites and corresponding areas of tergum VII dark brown or piceous, IV and V each with a narrow band and VI and VII each with a broad transverse band buff. Corium with punctures and veins apically more or less heavily marked with brown or piceous, punctures of clavus sometimes piceous. Hemelytral membrane hyaline, with faint to well-marked brown streaks between longitudinal veins and a row of piceous spots between bases of longitudinal veins where these arise from basal cells. Femora moderately to heavily marked with piceous streaks and spots, especially on posterior surfaces, sometimes almost wholly piceous. Tibiae stramineous, basally and sometimes apically, but never medially, with darker, brown or partly piceous annuli.

REMARKS. This species varies considerably in colour, specimens from Ethiopia being in general the palest, with less extensive piceous markings than those from central Africa. Apparently restricted to areas above the 2000 m contour. The compressed form and very short pubescence distinguish this species from all of its congeners.

DISTRIBUTION. Highlands of central Africa and Ethiopia. Schouteden (1957 : 308) records this species from Rwanda and Burundi.

MATERIAL EXAMINED

Acanthomia alpica Bergroth, lectotype ♀, Zaire: Mt Muhavura, Birunga, 2500 m (*Pr. W. Exp., Gylde*) (NR, Stockholm).

Ethiopia: 1 ♀, Gamo Province, Mt Tola (Gughe highlands), c. 3200 m, 10–14.xii.1948 (*H. Scott*); 1 ♀, edge of Djem-Djem Forest, c. 2700 m, 4.x.1926 (*Scott*); 1 ♀, Simien, below Atgheba Ghiyorghis, c. 3200 m, from wet rocks below a spring, 7.xii.1952 (*Scott*); 1 ♀, Simien, near Enchetcab, above 2700 m, beneath large stones round drinking pool for cattle, 25.xii.1952 (*Scott*); 1 ♀, Simien, Arghine, 3500 m or higher, near torrent in peat soil, under boulders or at roots of plants, 24.xi.1952 (*Scott*) (BMNH, London). **Zaire:** 1 ♀, Birunga, Kariss, 3000 m (*Pr. W. Exp., Gylde*) (paralectotype of *Acanthomia alpica* Bergroth) (NR, Stockholm). **Uganda:** 1 ♀, Butandiga, 12.i.1930 (*H. Hargreaves*) (BMNH, London). **Kenya:** 1 ♂, Muguga, 28.i.1969 (*E. S. Brown*) (UM, Oxford); 1 ♀, Naivasha, ix.1939 (*H. J. A. Turner*); 7 ♂, 1 ♀, West Aberdares, 3700 m, xii.1935 (*Turner*); 3 ♀, West Aberdares, 3000–3500 m, xi.1934 (*A. F. J. Gedye*); 1 ♂, Londiani, v.1936 (*Turner*); 1 ex. without abdomen, Kinangop, iii.1930 (*Turner*) (BMNH, London).

Clavigralla montana sp. n.

(Figs 230, 232, 234, 237)

Length: ♂, 7.3 mm (n = 1). Known only from the unique male holotype. Very similar to *C. alpica* in general form and in many details.

Length of antennal segment I divided by width of head including eyes 0.80. Ratio of lengths of antennal segments I : II : III : IV as 1.00 : 0.86 : 0.75 : 1.35. Length of basal segment of rostrum divided by width of head including eyes 0.66, ratio of lengths of rostral segments I : II : III : IV as 1.00 : 0.93 : 0.50 : 0.81.

Pronotum (Fig. 230) with posterolateral angles less strongly produced than those of *C. alpica* but bearing slightly longer spines; width across apices of spines divided by width of head including eyes 2.41. Scutellum (Fig. 232) distinctly more convex than that of *C. alpica*. Length of posterior tibia divided by length of posterior femur 0.81.

Abdominal sternites III–VII with posterolateral angles (Fig. 234) acutely produced, more prominent than in *C. alpica*. Male paramere (Fig. 237) with apical margin distinctly notched. Coloration as in darker examples of *C. alpica*, except that tibiae, tarsi, ground coloration of femora and antennal segments I–III red. Pubescence distinctly longer than that of *C. alpica*, many of the outstanding hairs on head, thorax and appendages as long as transverse diameter of an eye (e.g. pubescence of scutellum, Fig. 232).

REMARKS. Obviously very closely related to *C. alpica*, from which it may be distinguished by the longer pubescence and other characters presented above. This species probably occupies the same montane niche in West Africa as that favoured by *C. alpica* in Ethiopia and central Africa.

DISTRIBUTION. Cameroun mountains.

MATERIAL EXAMINED

Holotype ♂, Cameroun: Bamenda, 17.xiii.1955 (*Bechyne*) (BMNH, London).

Nomenclature of economically important species

As a result of this revision it has proved necessary to make changes in the names of the African species formerly referred to the genus *Acanthomia* Stål (variously mis-spelt in collections and published work as *Acanthomya* and *Acanthomyia*). This generic name falls as a synonym of *Clavigralla* Spinola, thus placing the African 'pod bugs' or 'spiny brown bugs' in the same genus as the Indian minor pest known as the 'tur pod bug', *Clavigralla gibbosa*, which has been the subject of several biological and anatomical studies (for details of which see Dolling, 1978 : 288–289).

The well-known and widespread *Acanthomia tomentosicollis* (Stål) reverts to *Clavigralla tomentosicollis* Stål and the less important '*A. brevirostris*' is shown to be restricted to a small area in the north-eastern part of the Ethiopian region, southern Arabia and parts of the Oriental region, its correct name being *Clavigralla scutellaris* (Westwood).

The minor pest species known as *A. hystricodes* (Stål) reverts to *Clavigralla hystricodes* Stål.

The name *Acanthomia horrida* (Germar), correctly applied, should refer (as *Clavigralla horrida* (Germar)) to an economically unimportant species with a restricted distribution in South Africa and Rhodesia. In West Africa the name *horrida* has been misapplied to the pest species which should now be called *Clavigralla shadabi* Dolling. The same name has been misapplied in East and

Southern Africa to a different species for which the name *Clavigralla elongata* Signoret is available. Both *shadabi* and *elongata* are widespread in Zaire.

Check-list of the species of the tribe Clavigrallini

CLAVIGRALLOIDES Dolling

- acantharis* (Fabricius)
- tuberculata* Dallas
- spinigera* Walker
- spinosus* Dolling
- quadrītuberculatus* (Breddin)
- enkidu* Dolling
- tuberosus tuberosus* (Hsiao)
- tuberosus indicus* Dolling

GRALLICLAVA Dolling

- indica* Dolling
- soror* Dolling
- rubra* Dolling
- solitaria* Dolling
- insularia* Dolling
- montana montana* Dolling
- montana sinensis* Dolling
- dissimilis* Dolling
- horrens horrens* (Dohrn)
- spinofemoralis* Shiraki
- horrens palawanensis* Dolling
- indecora* (Walker)
- irianensis* Dolling
- australiensis* Dolling

ONCASPIDA Stål

- pilosicollis* (Stål)
- similis* Signoret

CLAVIGRALLA Spinola

- Acanthomia* Stål syn. n.
- Lancha* Shadab syn. n.
- tubercuicollis* (Reuter) comb. n.
- leroyi* (Schouteden) comb. n.
- mixta* (Schouteden) syn. n.
- zambiae* sp. n.
- uelensis* (Schouteden) comb. n.
- hystrix* Dallas
- hystricodes* Stål
- elongata* Signoret
- flavipennis* Signoret

- shadabi* sp. n.
- breviceps* sp. n.
- ankatsoensis* sp. n.
- madagascariensis* sp. n.
- asterix* sp. n.
- schnelli* (Villiers) comb. n.
- mira* sp. n.
- annectans* sp. n.
- insignis* (Distant) comb. n.
- minor* (Schouteden) comb. n.
- andersoni* sp. n.
- angolensis* sp. n.
- egregia* sp. n.
- longispina* sp. n.
- aculeata* sp. n.
- horrida* (Germar)
- muricata* Stål syn. n.
- natalensis* Stål
- leontjevi* (Bergróth) comb. n.
- griseola* (Linnavuori) comb. n.
- ruandana* (Schouteden) comb. n.
- biston* sp. n.
- oxonis* sp. n.
- bovilla* sp. n.
- pusilla* sp. n.
- strabo* sp. n.
- pabo* sp. n.
- spiniscutis* (Bergróth) comb. n.
- marmorata* sp. n.
- tomentosicollis* Stål
- tomenticollis* Stål
- scutellaris* (Westwood)
- brevirostris* Stål
- annulipes* Signoret
- gibbosa* Spinola
- orientalis orientalis* Dolling
- orientalis serica* Dolling
- curvipes* (Stål) comb. n.
- simillima* sp. n.
- wittei* (Schouteden) comb. n.
- neavei* sp. n.
- alpica* (Bergróth) comb. n.
- montana* sp. n.

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